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ANNUAL REPORTS

OF THE

NEW MEXICO

College of Agriculture and Mechanic Arts

AND

Agricultural Experiment Station

COMPRISING

REPORTS FOR 1898-1899

Tenth Annual Report under the Territorial Act—Tenth Annual Report of the Agricultural Experiment Station—Ninth Annual Report under the Morrill Act

REPORTS FOR 1899-1900

Eleventh Annual Report under the Territorial Act—Eleventh Annual Report of the Agricultural Experiment Station—Tenth Annual Report under the Morrill Act

SANTA FE, N. M.:
NEW MEXICAN PRINTING COMPANY
1900

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NEW MEXICO COLLEGE
OF
AGRICULTURE AND MECHANIC ARTS

COMPRISING

REPORTS FOR 1898-1899

TENTH ANNUAL REPORT UNDER THE TERRITORIAL ACT . . . .

TENTH ANNUAL REPORT OF THE AGRICULTURAL EXPERIMENT STATION . .

NINTH ANNUAL REPORT UNDER THE MORRILL ACT . . . .

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REGENT'S REPORT

December 1, 1899.

To the Hon. M. A. Otero, Governor of New Mexico:

SIR:—In accordance with section 3637 of the compiled laws of New Mexico (embodying section 60, chapter 138 of the acts of the Legislative Assembly of the Territory of New Mexico, approved February 28, 1889), the regents of the New Mexico College of Agriculture and Mechanic Arts respectfully submit to you the following, being the tenth annual report, incorporating the report of the treasurer of the board.

The board of regents is at present constituted as follows: G. A. Richardson, of Roswell, whose term expires in 1900; A. A. Jones, of Las Vegas, whose term expires in 1901; Philip H. Curran, of Las Cruces, whose term expires in 1902; Prisciliano Moreno, of Las Cruces, whose term expires in 1903; L. Bradford Prince, LL. D., Rio Arriba, whose term expires in 1904. Regent Prince is president of the board, and regent Curran is secretary and treasurer.

The present officers of the college and station are as follows: Frederic W. Sanders, Ph. D., President and Professor of Political and Economic Science and Director of the Station; Clarence T. Hagerty, M. S., Professor of Mathematics and Astronomy; Arthur Goss, M. S., A. C., Professor of Chemistry, and Vice-Director and Chemist of the Station; Frank W. Brady, M. E., Professor of Mechanical and Civil Engineering and Superintendent of Buildings; Miss Ida M. Jones, Professor of Spanish; Theodore D. A. Cockerell, Professor of Entomology and Entomologist of the Station; Hiram Hadley, A. M., Professor of History and Pedagogy; Elmer O. Wooton, A. M., Professor of Botany and in charge of Geology and Physics and Botanist of the Station; Frederick F. Barker, LL. B., Professor of English and Latin; John D. Tinsley, B. S., Professor of Zoology, and Soil Physicist and Meteorologist of the Station; Charles A. Keffer, Professor of Agriculture and Horticulture, Agriculturist and Horticulturist of the Station, and Superintendent of Grounds; Miss Alice Horning, B. S., Associate Professor of Domestic Economy, Dean of Women, and Matron of Women's Hall; Ralph Roy Larkin, B. S., Principal of the Preparatory Department; Francis E. Lester, Registrar, Librarian and Instructor in Stenography and Typewriting; R. Fred Hare, M. S., Instructor in Chemistry and First Assistant Chemist of the Station; Charles Mills, Instructor in College shops; Ellen F. Gibson, Instructor in Elocution and Physical Culture, and Assistant in the Preparatory Department; Mrs. Laura Frenger, Instructor in Music; Fabian Garcia, B. S., Assistant in Agriculture and Assistant Agriculturist of the Station; Alfred M. Holt, M.S., Second Assistant Chemist of the Station; Joseph F. Bennett, Jr., M. S., Assistant in Botany, Geology and Physics; Humboldt Casad, Assistant in Horticulture and Assistant Horticulturist of the Station; Miss Geraldine Combs, Assistant in the Preparatory Department; Miss Helen M. Macgregor, Stenographer and Assistant in Stenography; Archie Bruce Sage, Assistant in Mechanical Engineering Department; Miss Florence G. Thornton, Assistant in the Preparatory Department; Charles E. Mead, B. S., Superintendent of the San Juan Sub-station at Aztec, and John Thornhill, Superintendent of the Las Vegas Sub-station at Las Vegas.

Changes in the board and in the officers of instruction have been as follows: Mr. Armijo died suddenly in the spring of 1899, and was succeeded in the regency by Col. R.

E. Twitchell, of Las Vegas, who accepted the appointment somewhat reluctantly and resigned a few weeks after his appointment and was succeeded by Mr. Prisciliano Moreno. Mr. Henry D. Bowman, president of the board, resigned during the summer because he learned that, as holder of a federal office, it was doubtful whether he was eligible to a regentship. He was succeeded both in the regency and in the presidency of the board, by L. Bradford Prince, LL. D., of Rio Arriba. Professor Cornelius T. Jordan, A. M., was succeeded in the presidency July 1st, 1899, by Frederic W. Sanders, Ph. D., who was called to the presidency of this institution from a professorship in West Virginia University. Professor George Vestal, who had been in very ill health for a considerable period of time, died late in October, 1898, and was succeeded by Professor Charles A. Keffer, lately Assistant Chief of the Forestry Division of the United States Department of Agriculture. The Department of Domestic Economy was created at the spring meeting in 1899, and the following summer Miss Alice Horning, B. S., a graduate of the Oregon Agricultural College and the Drexel Institute (Philadelphia) school of Domestic Economy, and at the time of her appointment, teacher of dietetic cooking in the Allegheny General Hospital, of Allegheny, Pennsylvania, was elected to take charge of this department, and to be Matron of the Girl's Dormitory, vice Miss Ida E. Freeman, who severed her connection with this institution at that time. Miss Freeman had, in addition to her duties as Matron, been assistant in the preparatory department; and the lowest class of the preparatory department having been dropped at this time, her services in that capacity were no longer required.

We would call especial attention to the evidences of progress alluded to in the latter part of the preceding paragraph—the establishment of the department of domestic economy in the college, and the abandonment of the lowest class in the preparatory department.

Three men were graduated from college in 1899 with the degree of B. S.,—Mr. Edward James Coe, from the Mechanical Engineering course, who now has a good position as engineer at the Fort Stanton government post; Mr. Walter Edwin Holt, from the general scientific course, who has gone into the business of raising cattle in Socoro county; and Professor John Dabney Tinsley, from the general scientific course, who had previously studied at the Miller Manuel Labor School and the University of Virginia, and who had taught at the former institution and at the college, where he still continues to teach. In this connection it may be noted as an interesting and valuable testimony to the strength of the scientific course of this college, that an able scientific investigator and teacher who had already spent several years as a student at one of the oldest and most honorable institutions of learning in the United States, should find it to his advantage to pursue undergraduate studies here.

Two things that have been accomplished during the present year seem to us worthy of comment and congratulation in this report. Notwithstanding the failures of his predecessors in this direction, and the discouragement he met when he proposed to undertake it, President Sanders has succeeded, by means of a careful and forcible presentation of the advantages to the railroads that would accrue therefrom, in getting the principal railroads in the Territory to agree to give free transportation to the station workers when traveling on experiment station business. Unfortunately a specific application must, in the case of the Santa Fe road, be forwarded to Chicago for each particular case, and the consequent delay somewhat interferes with the effectiveness of the concession; but it is believed, nevertheless. that the wisdom of the railroads in thus granting free transportation to those who are working directly for the development of the resources of the territory will be vindicated by the larger usefulness which the territorial Agricultural Experiment station will be able to show. It is too often forgotten that the resources of the institution are not sufficient to enable its workers to travel freely in the prosecution of investigations which might be of considerable economic benefit to the business interests of the territory. The other matter of which we desire to speak here is the holding of a Farmer's Institute, for the benefit of the San Juan and Animas valley ranchmen, at Aztec, in the northwestern part of the territory, under the auspices of this institution. The credit for this is largely due to Professor Keffer and Mr. Mead, the Superintendent of our branch station at Aztec, whose efforts have been ably seconded by the editor of the local paper at Aztec. Free transportation for our station workers will enable us to assist the farmers and ranchmen in different parts of the territory in a similar manner.

For further particulars of the conduct of the institution, reference is made to the treasurer's report hereto appended; and to the tenth annual report on the Hatch Fund and to the ninth annual report on the Morrill fund, copies of which accompany this report.

Respectfully submitted,

L. Bradford Prince, President;
P. H. Curran, Secretary and Treasurer.

TREASURER'S REPORT

Report on Territorial Funds for the Year Closing Nov. 30th, 1899

FINANCIAL STATEMENT NO. 1==TERRITORIAL GENERAL FUND

Receipts and Disbursements for the Year Ending Nov. 30th, 1899

RECEIPTS

From Territory	$ 5,176 48	
Territorial Building Fund, being transfer of balance on hand, as shown by last annual report	5,387 68	
Territorial Building Fund, being receipts from back taxes	121 44	
Matriculation and tuition fees	1,006 10	
Miscellaneous fees	40 00	
Sub-station farm-products	38 40	
		$11,770 10

DISBURSEMENTS

For Salaries	3,395 85	
Building, improvements and repairs	798 93	
Furniture and property	309 40	
Stationery, printing and advertising	813 65	
Miscellaneous expenses	631 61	
Insurance	35 76	
Text books	36 30	
Student labor	561 30	
Travelling expenses	570 50	
Heat, light and water	99 65	
Girls' dormitory	274 55	
Library	8 50	
Transferred from Bond Issue Fund, being overdraft as shown by last annual report	3,662 83	
Total disbursements	$ 11,198 83	
Overdraft, as shown by last annual report	8,520 02	
		$19,718 85
NET OVERDRAFT		$ 7,948 75

FINANCIAL STATEMENT NO. 2—AZTEC SUB-STATION FUND

Receipts and Disbursements for the Year Ending Nov. 30th, 1899

RECEIPTS

From Territory		740 62

DISBURSEMENTS

For Salary	$ 300 00	
Labor	91 15	
Supplies, blacksmithing, ditch dues, etc	81 60	
		$ 472 75
BALANCE ON HAND		$ 267 87

FINANCIAL STATEMENT NO. 3--LAS VEGAS SUB-STATION FUND

Receipts and Disbursements for the Year Ending Nov. 30th, 1899

(A) SPECIAL INSURANCE FUND

Received from insurance policy, by reason of destruction of barn		$ 1,000 00
Disbursed for contract for new barn ..$	965 00	
Architect's plans	50 00	
		$ 1,015 00
Overdraft, transferred to regular fund (see below)......................		$ 15 00

Account closed.

(B) REGULAR FUND

RECEIPTS

From Territory		$ 740 62

DISBURSEMENTS

For Salary.........................$	300 00	
Labor	44 00	
Supplies, blacksmithing, feed, etc.	112 35	
Overdraft transferred from insurance fund (see above)..................	15 00	
		$ 471 35
BALANCE ON HAND........		$ 269 27

FINANCIAL STATEMENT NO. 4==ROSWELL SUB=STATION FUND

Receipts and Disbursements for the Year Ending Nov. 30th, 1899

RECEIPTS

Balance on hand, as shown by last annual report ....$	242 05	
Received from Territory	740 62	
		$ 982 67

DISBURSEMENT

For livery		$ 5 00
BALANCE ON HAND........		$ 977 67

TERRITORY OF NEW MEXICO, }
COUNTY OF DONA ANA. } SS.

L. Bradford Prince, president of the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts, and Philip H. Curran, secretary and treasurer of the said Board of Regents, say that the foregoing financial statements do represent a true and correct statement of all moneys received and disbursed by and for the New Mexico College of Agriculture and Mechanic Arts, for and during the period named and the purpose stated in said financial statements, and that properly signed vouchers are on file for all disbursements shown by said financial statements to have been made.

IN WITNESS WHEREOF we have hereunto attached the seal of the said Board of Regents, and subscribed our names.

L. BRADFORD PRINCE,
President of the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts.

[SEAL]

P. H. CURRAN,
Secretary and Treasurer of the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts.

TENTH ANNUAL REPORT

of the

New Mexico Agricultural Experiment Station

for the year

1898-1899

DECEMBER 1, 1899.

To the Honorable Miguel A. Otero, Governor of New Mexico:

SIR:—Pursuant to the third section of the act of Congress of 1887, establishing agricultural experiment stations, I have the honor to transmit to you, in behalf of the Board of Regents of the college, as the tenth annual report of the Agricultural Experiment Station of the New Mexico College of Agriculture and Mechanic Arts, the report of the director, incorporating the reports of the several members of the station council, and the report of the treasurer of this board.

Respectfully submitted,

P. H. CURRAN,
Secretary and Treasurer.

DIRECTOR'S REPORT

MESILLA PARK, N. M., Dec. 1, 1899.

To the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts:

GENTLEMEN:—Herewith I submit the several reports of the members of the council of the New Mexico Agricultural Experiment Station for the year ending June 30th, 1899. As I did not become director of the station until July 1, 1899, and was in no way connected with the station during the period covered by this report, it does not seem proper for me to make any remarks upon the work of the year.

The officers of the station for the year named were:

Cornelius T. Jordan, A. M., Director
Arthur Goss, M. S., A. C., Vice-Director and Chemist
John D. Tinsley, Soil Physicist
T. D. A. Cockerell, Entomologist
George Vestal, Agriculturist and Horticulturist until his death, October 28, 1898, and thereafter
Charles A. Keffer, Agriculturist and Horticulturist
E. O. Wooton, A. M., Botanist
C. H. T. Townsend, Biogeographer and Systematic Entomologist
R. Fred Hare, M. S., First Assistant Chemist
Fabian Garcia, B. S., Assistant Agriculturist and Horticulturist
Humboldt Casad, Assistant Agriculturist and Horticulturist
Frank E. Lester, Clerk
Elizabeth Wickham, Assistant Clerk
Charles E. Mead, B. S., Superintendent of San Juan Branch Experiment Station
John Thornhill, Superintendent of Las Vegas Branch Experiment Station

The following bulletins were issued during the year:

No. 28, December, 1898. "Life Zones in New Mexico, No. 2," by T. D. A. Cockerell.

No. 29, May, 1899. "New Mexico Sugar Beets—1898," by Arthur Goss and A. M. Holt.

No. 30, May, 1899. "The Effect of Spring Frosts on the

Peach Crop; with Cultural Notes on the Peach Crop in New Mexico," by Fabian Garcia.

Respectfully submitted,
FREDERIC W. SANDERS, Director.

Report of the Agriculturist and Horticulturist

Dr. Frederic W. Sanders, Director New Mexico Experiment Station:

DEAR SIR:—Permit me to submit the following report of the work in the Department of Agriculture and Horticulture for the fiscal year ending June 30, 1899:

I assumed charge of the department March 1st, 1899, Mr. Humboldt Casad having been in charge after the death of my predecessor, Professor Vestal, which occurred in October, 1898. In consequence of Professor Vestal's long illness, but little experimental work had been attempted during the season of 1898; the little that was attempted consisted of (1) tests of thick and thin seeding of wheat, of barn-yard manure in different quantities on wheat; (2) observations on the blooming season of orchard fruits.

The affairs of the department seem to have been well managed by Mr. Casad while he was in charge, and I found the farm in good condition on assuming the management.

The equipment of the department being very inadequate, and I myself being a stranger to the country, I have inaugurated but little new work during the year, preferring to study the climatic and soil conditions, and thus secure a basis for future experimentation.

What has been undertaken since I took charge of the department is as follows:

1. By the courtesy of the Agrostologist of the United States Department of Agriculture, a grass garden was planted in the spring of 1899 of varieties thought to be adapted to arid regions.

2. In cooperation with Professor Tinsley and the Division of Soils of the United States Department of Agriculture, an experiment in determining the soil moisture of a field of corn

has been begun. Necessary apparatus failing to arrive, the year's work in this experiment is considered preliminary, being largely devoted to a study of methods, and it is expected that the experiment will cover a series of years.

3. A test of the adaptability of various fodder plants is under way.

4. Observations on the blooming period of orchard fruits have been continued (this being the fifth year of such observations).

5. An experiment in the winter pruning of peach trees, with a view to determining how best to renew the peach, has been made, and present indications (Aug. 29) promise interesting and valuable results.

6. An experiment in severe pruning of the apple as a means of counteracting the effects of drouth gives less promise of success.

7. Small tests of garden vegetables have been made.

8. Small tests with annual and perennial flowering plants have been begun.

PUBLICATIONS

Weekly press bulletins, of one eighth to one-half column's length, have been sent to all the newspapers of the territory, on timely topics of agricultural interest.

These have been very generally printed, and many favorable comments have been received from editors and readers.

In May, 1899 was issued bulletin No. 30, on "The effect of spring frosts on the peach crop, with cultural notes on the peach in New Mexico," by Fabian Garcia, B. S., assistant in the department. I wrote a brief introduction to the bulletin, and believe it to be of unusual value and interest.

NEEDS

The department is much in need of increased equipment. Very few additions have been made to the supply of tools and implements since the original equipment was purchased, and many implements are badly worn. Provision has been made for a considerable addition, and with improved facilities better work may be expected in the future.

SUB-STATIONS

Shortly after assuming charge of the department, the sub-stations were placed under my management. A tour of inspection was made in April 1899, and a report on the condition of the sub-stations, with recommendations regarding them was made to the director at that time.

Respectfully submitted,
CHARLES A. KEFFER.

Report of the Botanist

Frederic W. Sanders, Ph. D., Director.

SIR:—On account of the large amount of teaching in charge of the head of this department,—who has charge of the Geology and Physics as well as the Botany in the college,—not a great deal of experimental work has been done during the year from July 1, 1898, to July 1, 1899. A study of the flora is being carried on with the ultimate purpose of publication of a manual of the flora of the territory, and to this end plants are being collected at all times and preserved in the college herbarium. This herbarium is now of some size and is fairly representative of the flora of the territory, besides containing some other plants received from different parts of the United States. Some studies of the distribution of plants have been made, with the design of making a life-zone map of the territory.

The summer of 1899 has been spent in the field in the Sacramento mountains, making collections of plants in localities never before visited by a botanist. The season's trip has yielded between 3,000 and 4,000 specimens of dried plants, of which it is believed that several are new.

The head of this department is particularly anxious to become acquainted with the various investigators in the botanical field of this territory, and offers his services for the identification of plants and the answering of general questions relative to this subject.

Respectfully submitted,
E. O. WOOTON.

Report of the Chemist

Frederic W. Sanders, Director:

SIR:—Below will be found a brief outline of the work of the Chemical Department of the Experiment Station for the year ending June 30, 1899:

One of the most important features of the station chemical work during the past year has been a continuation of the sugar beet investigation. In the spring of 1898, 100 pounds each of two varieties of beet seed were secured from the United States Department of Agriculture, and distributed, together with instructions for growing the beets, to a number of farmers in the sections of the territory that had produced the best beets the year before. When ripe, the beets were shipped to the laboratory and analyzed. The results of the year's work were exceedingly encouraging. It is thought there are localities in New Mexico where as high grade beets can be grown as can be produced anywhere in the United States. The ten samples from Santa Fe and vicinity, for example, gave the remarkable average of 18.69 per cent sugar in the juice, with a purity of 82.1, in beets weighing 1.10 pounds each.

In connection with the sugar beet work this year, a study of the limestone and water in some of the most promising beet-producing sections of the territory was made, with a view to determining their adaptability to sugar factory purposes. As a result of this study, it was found that an abundance of high-grade limestone, and water of fair quality, is to be found in or near the best beet-producing districts.

The people of the territory have been taking an active interest in the sugar beet work, and in one or two cases capitalists of the highest standing have become interested in the matter, and are at present conducting experiments in some of what we have found to be the most promising localities, of their own accord, and it is hoped that the result may be the erection of additional sugar factories in the territory.

The results of the sugar beet work during 1898 were published in Bulletin 29, of this station.

In June, 1899, an investigation was commenced, under the supervision of Mr. Elwood Mead, in cooperation with the United States Department of Agriculture, Office of Experiment Stations, concerning the composition of the Rio Grande and Pecos river waters. Samples are being taken from these streams at regular intervals, by special observers, and forwarded to this laboratory for analysis. It is intended to continue this work for a considerable period in order to secure reliable averages. The work on the Rio Grande has, unfortunately, been very much broken up on account of there being no water in the river during the greater part of the summer.

A study of the composition of the Rio Grande water, in the ditch near the college, was made a few years since, and a portion of the results published in Bulletin No. 12 of this station. At that time daily samples were taken for a year, and composite samples analyzed once each month. In the investigation in cooperation with the United States Department of Agriculture mentioned above, samples are being taken from the river direct, and in this way a comparison between the water, and especially the amount of sediment in the same, in the river and the ditch will be secured.

A great deal of data in regard to waters of the territory has accumulated in the laboratory during the past six or seven years, and it is intended before a great while to classify this material and publish the same in bulletin form. It is believed that some interesting conclusions will be reached from this work.

Besides the investigations mentioned above, a large number of miscellaneous samples from different parts of the territory have, as usual, been analyzed. These samples have included waters, alkali soils, fertilizing material, canaigre, and a few determinations of rare minerals that could not be made outside of a well-equipped laboratory. In connection with this miscellaneous work might be mentioned the discovery by Mr. John R. DeMier of a large deposit of bat guano in some caves in the south central part of the territory.

This material consists of both the guano in its natural state and a large amount of the ash of older deposits which had been burned. Both the guano and the ash are remarkably high grade fertilizing material, the former containing 15 or 16 per cent of nitrogen (N), with a small amount of phosphoric acid and potash, while the ash contains about 30 per cent of phosphoric acid (P_2O_5) and 20 per cent of potash (K_2O).

The fitting up of the new laboratories not having been completed the year before, a large amount of the time of the working force was consumed during 1898-99 in continuing this work. In the station laboratories, among other things, a commodious hood with sliding glass doors was completed and is now in use. The plumbing was also completed on an additional work desk, now making three well-equipped desks available for station analytical work. These desks are well supplied with water and gas taps, air exhausts for rapid filtration, drain troughs, bottle racks and various other conveniences.

Besides the above, a substantial and well-arranged work desk was put in place in one of the station laboratories for the accommodation of the tools necessary for keeping the plant in repair. This desk is supplied, among other things, with a pipe vise and the tools necessary for plumbing work. It has proven, thus far, to be one of the most useful things about the laboratory.

The equipment of the department in the way of apparatus, etc., has been fully maintained during the year, and slightly increased in some respects.

Very respectfully,

ARTHUR GOSS.

Report of the Entomologist

Frederic W. Sanders, Ph. D., Director.

SIR:—As in previous years, the collections were considerably increased. Many letters were written to correspondents, and many studies made of miscellaneous insects. The greater part of the results obtained will be found in the publications of the Entomologist, but there are still many studies which have not reached the stage for publication.

An important work undertaken during the year was the preparation of the account of the Coccidæ (scale insects) for the Biologia Centrali-Americana. The Coccidæ of Mexico and Central America were almost unknown until the writer made a beginning of their study in 1893, having collected several species during a journey through Mexico. A few years later, it appeared to the Entomologist of the Department of Agriculture that a knowledge of the scale insects and other pests of Mexico was of much importance to us, in order that we might protect ourselves against those kinds which were likely to be imported into the United States and work injury to our horticultural and agricultural interests. Accordingly Prof. C. H. T. Townsend was sent to investigate the insect pests of Mexico, and collect specimens. The numerous scale-insects obtained on this trip were described by the writer in a Bulletin of the Department of Agriculture. After this, various species were obtained from Mexico, and large collections were made by Prof. Townsend for the Department of Agriculture, and also by Mr. Albert Koebele for the government of the Hawaiian Islands. All the Coccidæ of these collections came into the writer's hands, and in 1899 a final report, summing up the whole of the results, was placed in the hands of the editors of the Biologia Centrali-Americana, and published at the end of the year.

In the spring of 1899, in addition to the work on Mexican Coccidæ, studies were made of various American and exotic scale-insects, in conjunction with Mr. P. J. Parrott, of the Kansas Agricultural College, who spent some six weeks at Mesilla Park. The results of these studies were published in the Kansas "Industrialist."

In 1898 a paper was written, and subsequently published in the "American Naturalist," setting forth the results of studies of vernal phenomena at Mesilla Park. Some detailed observations had been made by Miss Ivah Mead, under the direction of the Entomologist, and incorporated in her thesis for the degree of B. S. The consideration of these and other observations led the present writer to the conclusion that the spring development of plants and animals in the arid region was largely controlled by the distribution of frosts, and not so much by the total amount of heat received. It appeared that one of the great problems for the horticulturist in the arid region was that of obtaining varieties of fruits etc., which should behave like the native vegetation, remaining dormant until the frosts were over, and then developing with great rapidity.

During the latter part of the fiscal year 1898–1899, the Entomologist paid a visit to Washington, to work for about five weeks in the Division of Entomology, U. S. Department of Agriculture. This trip was made at the expense of the Department of Agriculture. Most of the time was devoted to an investigation of the earlier literature of the Coccidæ, and the preparation of a table for the identification of the genera of these insects. The principal results of the bibliographical investigations were published in the proceedings of the Academy of Natural Sciences of Philadelphia. Among other things, it developed that the name used for the cochineal of commerce for the last 150 years was incorrect, and that the names of some of the commonest scale-pests of this country had to be revised.

During the visit to Washington, a collection of Coccidæ from Porto Rico was examined, and reported on in conjunction with Mr. T. Pergande of the Department of Agriculture. Only one scale-insect had hitherto been reported from Porto Rico, so the collection was of considerable interest. The report was published in a Bulletin of the Division of Entomology, Department of Agriculture.

The work on the Codling Moth had been confined to removing the fruit from the experiment station orchard, with a view to starving the insect out. While this apparently produced good results, a good many moths came from neighboring infested orchards, and it was concluded that this method, as applied to single orchards only, did not pay.

Publications of the Entomologist, 1898-1899

(A) JULY-DEC., 1898

1. (Description of Kermes concinnulus) in E. E. Bogue, Canad. Entom., July, p. 172.

2. Philanthus Henricus. Canad. Entom., July, p. 184.

3. Synopsis of the North American Bees of the Genus Stelis. Entomologist, July, pp. 166-168.

4. Coccidæ, or Scale Insects, xii. Bull. Bot. Dept. Jamaica, pp. 40-44.

5. Note on the Mydaidæ of New Mexico. Amer. Nat., pp. 448-449.

6. Some New Coccidæ. Ann. Mag. Nat. Hist., July, pp. 24-27.

7. The Insect Visitors of Flowers in New Mexico, ii. Zoologist, July, pp. 311-314.

8. (With F. Garcia). Preliminary Note on the Growth of Plants in Gypsum. Science, July 29, pp. 119-121.

9. A new Hemileuca. Psyche, Aug., p. 252.

10. The Development of Mantis. Amer. Naturalist, July, pp. 513-514.

11. [Review of] Revision of the N. Amer. Slugs: Binneya, Hemphillia, Hesperarion, Prophysaon and Anadenulus. By H. A. Pilsbry and E. G. Vanatta. Nautilus, Aug., pp. 47-48.

12. The North American Bees of the Genus Prosapis. Entomologist, Aug., pp. 185-192, Sept., pp. 216-219, Oct., pp. 236-239.

13. Note on a Chalcidid of the Sub-Family Encyrtinæ, Parasitic on Phenacoccus minimus. Canad. Entom., Aug., p. 224.

14. A New Southwestern Sophia. Bull. Torrey Bot. Club, Aug., p. 460.

15. The Coccid Genus Solenophora in the United States. Psyche, Sept., pp. 262-263.

16. Note on Aspidiotus Greenii. Ent. Mo. Mag., Aug., 1898, pp. 184-185.

17. A Southern Type of Andrena in Connecticut. Ent. News, Sept., pp. 171-172.

18. Basil Valentine. Science, Sept. 9, p. 335.

19. Higher Education. Albuquerque Morning Democrat, Sept. 18, p. 5.

20. Agricultural College Notes. Albuquerque Morning Democrat, Sept. 18, p. 5.

21. On Some Small Bees from Arizona. Canad. Entom., Sept., pp. 237-239.

22. Supplementary note (to a paper by Mr. Ehrhorn) and Notice of a New Eriococcus. Canad. Entom., Sept., pp. 246-247.

23. (Letter to editor, on codling moth and grasshoppers). S. W. Farm and Orchard, Sept., p. 9.

24. Some New Coccidæ, Collected at Campinas, Brazil, by Dr. F. Noack. Revista do Museu Paulista, iii, pp. 41-42.

25. Some Coccidæ Collected by Dr. F. Noack at Campinas, Brazil. Revista do Museu Paulista, iii, pp. 43-44.

26. The Teaching of English. Albuquerque Morning Democrat, Oct. 9.

27. The School at Tularosa. Albuquerque Morning Democrat, Oct. 9.

28. (With C. H. T. Townsend). Coccidæ Collected in Mexico by Messrs. Townsend and Koebele in 1897. Journ. N. Y. Entom. Soc., Sept., pp. 165-180.

29. The Coccidæ of the Sandwich Islands. Entomologist, Oct., pp. 239-240.

30. The Larva of Ctenucha venosa. Entomologist, Oct., p. 241.

31. A New Alcurodes on Oak. Canad. Entom., Oct., p. 264.

32. A New Scale Insect Found on Bearberry. Canad. Entom., Oct., pp. 266-267.

33. Letters to Teachers and Students, viii. To a former student, now a teacher, on the relation between the teacher and the student. Inland Educator, Oct., pp. 97-98 (see also Nov., p. 141).

34. A Case of Inherited Instinct. Nature, Oct. 6, p. 546.

35. Coccidæ, or Scale Insects, xiii. Bull. Bot. Dept. Jamaica, pp. 107-109.

36. Musings of a Teacher in New Mexico. Albuquerque Morning Democrat: i. As to the Parents' Part, Oct. 23. ii. As to the Teachers' Part, Oct. 30. iii. As to the Kindergarten, Nov. 6. iv. As to the Peasantry, Nov. 13. v. As to the Qualifications of Teachers, Nov. 20. vi. As to School Superintendents, Nov. 27. vii. As to School Books, Dec. 4. viii. As to Nature Study, Dec. 11. ix. As to School Elections, Dec. 18.

37. New North American Insects. Ann. and Mag. of Nat. Hist., Oct., pp. 321-331.

38. Eschscholtzia Mexicana-parvula. Botan. Gazette, Oct., p. 279.

39. Another Yellow Perdita. Ent. News, Nov., pp. 215-216

40. A bright red Parasite of Coccidæ. Canad. Entom., Nov., p. 276.

41. Two New Species of Lecanium from Canada. Canad. Entom., Nov., pp. 293-294.

42. (With G. B. King). A New Form of Pulvinaria. Psyche, Nov., pp. 286-287.

43. Note on three Pyralid moths of the genus Pachyzancla. Psyche, Nov., p. 288.

44. (With W. Newell). (Descriptions of new forms of Aspidiotus) in H. Osborn, Proc. Iowa Acad. Sci., V. pp. 229-230.

45. Life-Zones in New Mexico. Science, Nov. 4, pp. 635-636.

46. Two New Coccidæ from Lagos, W. Africa. Entomologist, Nov., p. 259.

47. New Polygyras from White Mountain, New Mexico. Nautilus, Nov., pp. 76-77.

48. The Lower Sonoran Cochineal. Science, Nov. 11, p. 675.

49. Some Notes on the Entomology of Prunus. Bull. 27, N. M. Agr. Exp. Sta., pp. 132-134.

50. New North American Insects. Ann. and Mag. of Nat. Hist., Nov., pp. 401-404.

51. Pot Experiments at the New Mexico Experiment Station. Albuquerque Morning Democrat, Dec. 2, p. 4.

52 Technical Instruction for the Peasantry. Albuquerque Morning Democrat, Dec. 4, p. 6.

53. Second Note on a New Hemileuca. Psyche, Dec., p. 298.

54. Entomological Ethics. Proc. Assoc. Econ. Ent., Bull. 17, N. S., Div. Ent., Dept. Agriculture, pp. 87-90.

55. Arctic and Sub-Arctic Bees. Nature, Nov. 24, pp. 76-77.

56. Does College Education Pay? Inland Educator, Dec., p. 206.

57. (With G. B. King). The Coccid Genus Sphæroccus in Massachusetts. Canad. Entom., Dec., p. 326.

58. (Review of) The Instincts and Habits of the Solitary Wasps. By G. W. and E. G. Peckham, Science, Dec. 16, pp. 876-877.

59. Another Question of Nomenclature. Bot. Gazette, Dec., pp. 436-437.

60. Tables for the Determination of New Mexico Bees. Bull. Sci. Lab., Denison University, xi, pp. 41-71.

61. Notes on Bees taken at Albuquerque. New Mexico, in September, 1897 Bull Sci. Lab., Denison University, xi, pp. 72-73.

62. Educational Association. Albuquerque Morning Democrat, Dec. 29 and 31.

63. New and Little-Known Hymenoptera Taken by Prof. C. H. T. Townsend and Mr. C. M. Barber in New Mexico in 1898. Ann. Mag. Nat. Hist., Dec., pp. 448-457.

64. Life-Zones in New Mexico, ii. The Zonal Distribution of Coleoptera. Bull. 28, N. M. Agr. Exp. Sta., pp. 135-179.

65. Agriolimax lævis var. maculatus. Sci. Gossip, Dec., p. 220.

(B) JAN.-JUNE, 1899.

66. The Use of Higher Education. Educational Review, Jan., pp. 87-87.

67. Some Synonymy. Psyche, Jan., pp. 311-312.

68. The Educational Association. Dona Ana County Republican, Jan. 7, p. 2.

69. Letters to Teachers and Students, ix. To a Teacher, who advocated an all-around education. Inland Educator, Jan., 1899, pp. 259-260.

70. Two New Genera of Lecaniine Coccidæ. Entomologist, Jan., pp. 12-13.

71. Notes on the Nomenclature of Some Hymenoptera. Entomologist, Jan., p. 14.

72. Vernal Phenomena in the Arid Region. Amer. Naturalist, Jan., pp. 39-43.

73. Technical Education. Dona Ana County Republican, Jan. 21.

74. (Description of Cryptoripersia) in E. M. Ehrhorn, Canad. Entom., Jan., p. 5.

75. Catálogo de las Abejas de México. Bibl. Agric. de la Secretaría de Fomento, Mexico, p. 20.

76. The Bees of Kansas. Ent. News, Jan. 1899, pp. 3-4.

77. Postscript on Perdita. Psyche, Feb., p. 323.

78. (With H. A. Pilsbry). A New Genus of Helices. Nautilus, Jan., p. 107.

79. Notes on the Indentata Group of Vitrea. Nautilus, Feb., p. 120.

80. (Review of) The Chinch Bug. By F. M. Webster. Science, Feb. 3, pp. 175-176.

81. Miscophinus or Hypomiscophus? Entom. News, Feb., p. 40.

82. Grasshoppers in New Mexico. Entom. News, Feb., pp. 43-44.

83. Megetra vittata Injuring Sugar Beets. Entom. News. Feb., p. 44.

84. First Supplement to the Check-List of the Coccidæ. Bull. Ills. State Lab. Nat. Hist., v. pp. 389-398.

85. On some Panurgine and other Bees. Trans. Amer. Ent. Soc., xxv, pp. 185-198.

86. The Odour of Coccidæ. Canad. Entom., Feb., p. 36.

87. Three New Coccidæ from Brazil. Canad. Entom., Feb., pp. 43-45.

88. Notes on Central American Coccidæ, with descriptions of three new species. Ann. Mag. Nat. Hist., Feb., pp. 167-170.

89. (With P. J. Parrott). Contributions to the Knowledge of the Coccidæ. The Industrialist, March, pp. 159-165; April, pp. 227-237; May, pp. 276-284.

90. Mexi-Americans. The Outlook, Feb. 25, pp. 475-476.

91. The Authorship of Illustrations. Natural Science, Feb., p. 166.

92. Contributions to the Entomology of New Mexico, i. A Catalogue of the Fossorial Hymenoptera of New Mexico. Proc. Davenp. Acad. Nat. Sci., vii, pp. 139-148.

93. Contributions to the Entomology of New Mexico, ii. Some Records of Diptera. Proc. Davenp. Acad. Nat. Sci., vii, pp. 149-156.

94. Another New Snail from New Mexico: Nautilus, March, p. 131.

95. On the Larva of Evergestis funalis, Grote. Ent. News, March, p. 68.

96. Allorhina as a Fruit Pest. Ent. News, March, p. 71.

97. Machilis conjuncta, Folsom. Ent. News, March, p. 71.

98. Mais Algumas Coccidæ, colligidas pelo Dr. F. Noack. Revista do Mus. Paulista, iii, pp. 501-503.

99. Notes on Some New Mexico Butterflies. Canad. Entom., March, pp. 65-66.

100. (Review of) A Synonymio Catalogue of North American Rhopalocera. By H. Skinner, Science, March 10, pp. 373-374.

101. A Date-Palm Scale Insect. Science, March 17, p. 417.

102. (Review of) Colour in Nature: a Study in Biology. By Marion J. Newbigin, Science, March 24, pp. 448-449.

103. The Twelve-Spotted Green Beetle. Rio Grande Republican, March 31. S. W. Farm and Orchard, April, p. 4.

104. (With G. B. King). An Apparently New Lecanium found on White Cedar. Psyche, April, pp. 349-350.

105. Letter on Codling Moth. S. W. Farm and Orchard, April, p. 7.

106. The Coccidæ of the Sandwich Islands. Entomologist, April, p. 93.

107. Bees and Flowers. Natural Science, May, p. 413.

108. Aleurodicus mirabilis. Psyche, May, p. 360.

109. Four New Diaspine Coccidæ. Canad. Entom., May, pp. 105-107.

110. A New Wax-Scale from West Africa. Entomologist, May, p. 127.

111. Notes on American Bees. Entomologist, May, pp. 128-129.

112. Letters to Teachers and Students, x. To a College Professor on the Education of Girls. Inland Educator, May, pp. 157-159.

113. On the Habits and Structure of the Coccid Genus Margarodes. Amer. Naturalist, May, pp. 415-417.

114. Chrysis Schlettereri, Mocsary. Entom. News, June, p. 178.

115. (Description of supposed variety of Lecanium Anthurii) in G. B. King, Canad. Entom., June, p. 142.

116. (Description of Lecanium perlatum). A Persuasao (Azores) Jan. 25, p. 1.

117. (With H. A. Pilsbry). Philomycus lactiformis (Blainville). Nautilus, June, p. 24.

118. The Coccidæ of the Sandwich Islands. Entomologist, June, p. 164.

119. Notes on American Bees. Entomologist, June, pp. 154-159.

120. Notes on Australian Coccidæ. Victorian Naturalist, May, pp. 13-16.

121. Four New Bees of the Genus Perdita, collected by Dr. L. O. Howard in Mexico. Ann. Mag. Nat. Hist., June, pp. 492-495.

122. Faunæ and Faunulæ of New Mexico. Science, June 16, p. 848.

T. D. A. COCKERELL.

Report of Soils and Irrigation Investigations

Dr. F. W. Sanders, Director:

SIR:—At the beginning of the present year, July 1, 1898, I was assigned to special work on soils and irrigation. This work has been done in cooperation with the United States Department of Agriculture, Division of Soils and Division of Irrigation Investigations of the Office of Experiment Stations, and the Department of Agriculture and Horticulture of this station.

The following lines of work have been begun:

a. Measurement of water applied under the present system of irrigation. This has been done on the experiment station orchard, and on a thirty-acre tract of alfalfa belonging to Mr. John Milman, near Las Cruces, N. M. The water is measured by a flume.

b. Measurement of evaporation from a free water surface. This is done by measuring the weekly loss from a cubical tank filled with water, 3 feet on edge, sunk with its surface flush with the ground.

c. Soil Moisture.—Through the winter and early spring 12 plats were sampled about once a week in order to determine the effect of top dressings of manure and mulch on the rate at which the soils lost water. These samples were taken to a depth of one foot with sampling tubes, and the moisture determined by drying and weighing. Early in April, with the assistance of the Division of Soils, United States Department of Agriculture, we were enabled to install a set of electrodes, etc., for the determination of moisture by the electrical method. By this means we have been enabled to follow quite closely the changes in soil moisture in 12 plats of corn planted for this purpose. On these plats also we have studied the effects of sub-soiling and of different amounts of cultivation. It was intended to determine also the effects of different amounts of irrigation, but lack of water has prevented this. The electrical method has not proven entirely satisfactory this season, and the records are not continuous; but, with modifications which will be made for next season, the method promises to be of great value. Samples are also received weekly from the Las Vegas and San Juan sub-stations, and their moisture content determined.

d. Some work has also been done on the physical characters of the soils of the experiment station farm.

e. The month of June was spent with a party from the United States Department of Agriculture, Division of Soils, in studying the soils in the vicinity of Roswell, N. M. Much valuable data was obtained both in regard to the physical characters of those soils and their alkali content. There was also a good opportunity for studying sub-irrigation and its effects, and we were able to make some suggestions as to remedies.

f. Having spent considerable time during the two preceding years in studying mealy-bugs, and having become somewhat familiar with them, I have continued to devote to them such time as I could spare from my other work. The specimens sent for identification have been determined and descriptions of several new species have been published.

Respectfully submitted,

J. D. TINSLEY.

TREASURER'S REPORT*

Agricultural Experiment Station of the New Mexico College of Agriculture and Mechanic Arts
in account with
The United States Appropriation, 1898-99

Dr.

To receipts from the Treasurer of the United States as per appropriation for fiscal year

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*Detailed list of items omitted in printing.

	ending June 30, 1899, as per Act of Congress, approved March 2, 1887		$15,000 00
	Cr.		
By	Salaries	1	$10,111 66
	Labor	2	1,414 52
	Publications	3	487 16
	Postage and stationery	4	241 81
	Freight and express	5	161 94
	Heat, light and water	6	45 75
	Chemical supplies	7	83 78
	Seeds, plants and sundry supplies	8	372 73
	Fertilizers	9	68 50
	Feeding stuffs	10	84 93
	Library	11	176 62
	Tools, implements and machinery	12	395 01
	Furniture and fixtures	13	161 70
	Scientific apparatus	14	265 09
	Live stock	15	270 50
	Travelling expenses	16	606 30
	Contingent expenses	17	52 00
	Building and repairs	18	....
	Balance		....
	Total		$15,000 00

To	receipts from other sources than the United States, for the year ending June 30, 1899:		
	Farm products	$ 249 45	
	Miscellaneous	300 32	
	Dr.		$ 549 77
By	Labor (student)	118 58	
	Tools, implements and machinery	55 88	
	Live stock	190 00	
	Building and repairs	185 31	
	Cr.		$ 549 77

We, the undersigned, duly appointed auditors of the corporation, do hereby certify that we have examined the books and accounts of the New Mexico Agricultural Experiment Station for the fiscal year ended June 30, 1899; that we have found the same well kept and classified as above, and that the receipts for the year from the Treasurer of the United

States are shown to have been $15,000.00, and the corresponding disbursements $15,000.00; for all of which proper vouchers are on file and have been by us examined and found correct, thus leaving no balance on hand.

And we further certify that the expenditures have been solely for the purposes set forth in the Act of Congress approved March 2, 1887.

[SEAL]
P. MORENO,
P. H. CURRAN.

Attest: F. E. LESTER, Custodian.

MORRILL REPORTS FOR 1898-99

Ninth Annual Report of the President of the College and Treasurer of the Board of Regents to the Secretary of Agriculture and the Secretary of the Interior, Under Act of Congress of August 30, 1900

Morrill Fund

For the Endowment of Colleges of Agriculture and Mechanic Arts

REPORT OF THE PRESIDENT OF THE COLLEGE

I. Condition and progress of the institution for the year ended June 30, 1899:

The courses of study in the college have not been materially changed, but in the minor details have been strengthened.

A frame building has been erected on the college grounds, and has been used as a club-house for young men. This has only partially met the demand for better dormitory accommodations, yet it has been fully occupied throughout the year. Improvements have also been made in the basement of the main college building.

The work of the experiment station has progressed satisfactorily during the past year. Investigations in sugar beet culture and soil moisture have been continued. The station has adopted the plan of issuing press bulletins weekly in addition to the regular printed bulletins.

The equipment of the various departments of the college has been added to, the electrical equipment receiving numerous additions. Satisfactory work has been done in all departments of instruction. The enrollment has been about the same as for the year previous. A class of three men was graduated with the degree of Bachelor of Science at the close of the year, and the degree of Master of Science was conferred upon one post-graduate.

II. Receipts for and during the year ended June 30, 1898:

1.	Balance on hand July 1, 1898	$ 3,561 05
2.	State aid:	
	a. Income from endowment granted by state	....
	b. Appropriation for current expenses	4,094 34
	c. Appropriations for building or for other special purposes	101 14
3.	Federal aid:	
	a. Income from land grant, act of July 2, 1862	....
	b. Additional endowment, act of August 30, 1890	24,000 00
	c. For experiment stations, act of March 2, 1887	15,000 00
4.	Fees and all other sources	1,333 95
	Total	$48,090 48

III. Expenditures for and during the year ended June 30, 1899:

1.	Instruction in the subjects specified in Sec. 1, Act of August 30, 1890	$25,057 56
2.	Instruction in all other subjects, if any, not mentioned in Question 1 of this series	1,275 00
3.	Administrative expenses (president's, sectretary's, treasurer's, librarian's salary, clerical service, fuel, light, etc.)	4,300 90
4.	Experiment station	15,559 62
	Total	$46,193 08

IV. Property, year ended June 30, 1899:

Value of all buildings, $43,000; of other equipment, $40,000. Value of above property (an estimate only is expected) not used for instruction in the subjects specified in Sec. 1 of Act of August 30, 1890: Buildings, $12,350; of other equipment, $5,000.

Total number of acres, 270; acres under cultivation, 100; acres used for experiments, 75; value of farm lands, $6,000; amount of all endowment funds, none.

Number of bound volumes, June 30th, 1899, 3,490; pamphlets, 1,500.

V. Faculty during the year ended June 30, 1899:

1. College of Agriculture and Mechanic Arts:

	Male	Female
a. Preparatory classes	1	4
b. Collegiate and special classes	12	2
c. Total, counting none twice	13	5
2. Number in all other departments (avoiding duplication	2	1
3. Number of staff of experiment station	9	

VI. Students during the year ended June 30, 1899:

1. College of Agriculture and Mechanic Arts:

	Male	Female
a. Preparatory classes	101	45
b. Collegiate and special classes	18	21
c. Post graduate courses	3	..
Total, counting none twice	123	63
2. Number in all other departments	22	4

3. Number of students that pursued courses in agriculture, 1; mechanical engineering, 6; civil engineering, none; electrical engineering, none; mining engineering, none; architecture, none; household economy, none; veterinary science, none; military tactics, none. (It is not expected that the sum of these figures will equal the number of students given above).

4 What degrees, and how many of each kind, were conferred in 1898-99? On men, three (Bachelor of Science); on women, none.

5. What, and how many, honorary degrees were conferred in 1898-99? None.

The foregoing report is for the term during which my predecessor, Professor C. T. Jordan, was president, and is made by me upon information and belief, in accordance with data furnished me by the college clerk. I became president July 1, 1899.

[Signed] FREDERIC W. SANDERS,
Date: Sept. 1st, 1899. President.

REPORT OF THE TREASURER*

RECEIPTS

Balance on hand July 1st, 1898		$ 3,319 00
Date of receipt of installment for 1898-99, August 31st, 1898. Amount		24,000 00
Total available for year ended June 30, 1899		$27,319 00

DISBURSEMENTS

Agriculture:		
1. For salaries of instructors:		
George Vestal	$ 175 02	
Charles A. Keffer	300 00	
Fabian Garcia	600 00	
2. For facilities as follows:		
Text books and reference books	3 21	
Apparatus, machinery, stock and material	47 05	
Total		$ 1,125 28
Mechanic Arts:		
1. For salaries of instructors:		
Frank W. Brady	1,800 00	
Charles Mills	1,200 00	
D. G. Cravens	350 00	
2. For facilities as follows:		
Text books and reference books	53 28	
Apparatus, machinery, stock and material	1,499 13	
Total		$ 4,902 41
English Language:		
1. For salaries of instructors:		
F. F. Barker	$1,000 00	
F. E. Lester	1,000 00	
Ida M. Jones	300 00	
R. R. Larkin	600 00	
Ellen F. Gibson	575 00	
Geraldine Combs	600 00	
Kate C. Doughty	500 00	

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*Detailed list of items omitted in printing.

Ida E. Freeman	300 00	
Helen M. Macgregor	300 00	
Ella F. Branigan	270 00	
2. For facilities as follows:		
Text books and reference books	304 74	
For apparatus, machinery, stock and material	88 56	
Total		$ 5,838 30

Mathematical Science:

1. For salaries of instructors:		
Clarence T. Hagerty	$1,800 00	
R. R. Larkin	300 00	
Joseph F. Bennett	600 00	
Ellen F. Gibson	300 00	
Kate C. Doughty	400 00	
Geraldine Combs	300 00	
Ida E. Freeman	300 00	
2. For facilities as follows:		
Text books and reference books	64 54	
Apparatus, machinery, stock and material	46 57	
Total		$ 4,111 11

Natural or Physical Science:

1. For salaries of instructors:		
Arthur Goss	$ 900 00	
E. O. Wooton	1,200 00	
J. D. Tinsley	900 00	
R. F. Hare	1,000 00	
T. D. A. Cockerell	400 00	
R. R. Larkin	300 00	
2. For facilities as follows:		
Text books and reference books	186 73	
Appartus, machinery, stock and material	768 14	
Total		$ 5,654 87

Economic Science:

1. For salaries of instructors:		
C. T. Jordan	$1,700 00	
Hiram Hadley	1,650 00	

2. For facilities as follows:		
Text books and reference books ..	60 59	
Apparatus, machinery, stock and material	15 00	
Total		$ 3,425 59

Total expended during the year	$25,057 56
Balance remaining unexpended July 1, 1899	$ 483 32

I hereby certify that the above account is correct and true, and, together with the schedules hereunto attached, truly represents the details of expenditures for the period and by the institution named, and that said expenditures were applied only to instruction in agriculture, the mechanic arts, the English language and the various branches of mathematical, physical, natural and economic science, with special reference to their applications in the industries of life and to the facilities for such instruction.

(Signed) P. H. CURRAN, Treasurer.

REPORTS

FOR

1899-1900

TERRITORIAL REPORTS

FOR

1899-1900.

REGENTS' REPORT

September 17, 1900.

To the Honorable Miguel A. Otero, Governor of New Mexico.

SIR:—In accordance with section 3637 of the Compiled Laws of New Mexico (embodying section 60, chapter 138, of the acts of the Legislative Assembly of New Mexico, approved February 28th, 1889), the Regents of the New Mexico College of Agriculture and Mechanic Arts respectfully submit to you the following, being the eleventh annual report, embodying the reports of the President of the College and of the Treasurer of the Board; and accompanied by copies of the Morrill and Hatch reports.

The board of regents is constituted as follows: G. A. Richardson, of Roswell, whose term expires in 1900; A. A. Jones, of Las Vegas, whose term expires in 1901; Philip H. Curran, of Las Cruces, whose term expires in 1902; Prisciliano Moreno, of Las Cruces, whose term expires in 1903; L. Bradford Prince, LL. D., of Rio Arriba, whose term expires in 1904. Regent Prince is president of the board, and Regent Curran is secretary and treasurer.

The present officers of the college and station are as follows: Frederic W. Sanders, Ph. D., President and Professor of Political and Economic Science and Director of the Station; Clarence T. Hagerty, M. S., Professor of Mathematics and Astronomy; Arthur Goss, M. S., A. C., Professor of Chemistry and Vice-Director and Chemist of the Station;

Frank W. Brady, M. E., Professor of Mechanical Engineering and Superintendent of Buildings; Theodore D. A. Cockerell, Consulting Entomologist of the Experiment Station; Hiram Hadley, A. M., Professor of History and Pedagogy; Elmer O. Wooton, A. M., Professor of Biology, in charge of Geology and Physics, and Botanist of the Experiment Station; Frederick F. Barker, LL. B., Professor of Rhetoric and Literature; John D. Tinsley, B. S., Professor of Soil Physics and Soil Physicist and Meteorologist of the Experiment Station; Alice Horning, B. S., Professor of Domestic Economy, Dean of Women and Matron of the Women's Hall; John J. Vernon, B. S. Agr., Professor of Agriculture and Horticulture, and Agriculturist of the Experiment Station; W. M. Reed, C. E., Professor of Civil and Irrigation Engineering and Irrigation Engineer of the Experiment Station; Ralph Roy Larkin, B. S., Principal of the Preparatory Department; Francis E. Lester, Registrar and Principal of the Stenography Department; Raleigh Frederick Hare, M. S., Assistant Professor of Chemistry and Assistant Chemist of the Experiment Station; Fabian Garcia, B. S., Assistant Professor of Horticulture, and Horticulturist of the Experiment Station; Charles Mills, Instructor in College Shops; Mrs. Laura Frenger, Instructor in Music; William Alexander Sutherland, B. S., Instructor in Spanish and Latin; Alfred M. Holt, M. S., Second Assistant Chemist of the Station; Joseph F. Bennett, Jr., M. S., Assistant in Botany, Geology and Physics; Miss Geraldine Combs, Assistant in the Preparatory Department; Miss Helen M. Macgregor, Stenographer and Assistant in Stenography; Archie Bruce Sage, B. S., Assistant in the Mechanical Engineering Department; Miss Florence G. Thornton, Assistant in the Preparatory Department; Miss Charlotte A. Baker, Librarian and Assistant in English; Mrs. Lavinia Lea Brown, Assistant in the Preparatory Department; Charles E. Mead, B. S., Superintendent of the San Juan Sub-station at Aztec; and John Thornhill, Superintendent of the Las Vegas Sub-station at Las Vegas.

In the subjoined report of the President of the College, we would call especial attention to the statement about the financial condition of the college, in the confidence that your Excellency will recommend to the Legislative Assembly an appropriation sufficient to relieve us of our indebtedness to the friends of the college who came to its assistance when the Legislature was not in session to make the necessary appropriation.

Respectfully submitted for the Board of Regents,

P. H. CURRAN,
Secretary and Treasurer.

PRESIDENT'S REPORT

AUGUST 1, 1900.

To the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts:

GENTLEMEN:—I beg leave to present my first annual report as president of this institution, being the report of the condition of the college and experiment station for the eleventh year of its existence.

The year has been an important, and I might almost say a crucial one, in the history of the institution.

Our Financial Situation

The first difficulty that confronted the present administration was a financial one. Our income is derived from three principal sources: *First*, the U. S. Hatch fund, which is applicable to the work of the Agricultural Experiment Station exclusively, not one cent of it being applicable to college purposes; *Second*, the U. S. Morrill fund, which can only be spent for the payment of teachers and the purchase of text and reference books and movable apparatus to facilitate instruction in certain specified subjects; *Third*, the Territorial fund, composed of (*a*) an annual levy of one-fifth of a mill, *and* (*b*) the tuition fees, etc., from the students. In addition to these principal sources of income, there is the product of the experiment station farm, which, however, can only be used for experiment station purposes, and is not applicable to college purposes, and which is extremely small. The annual income from the farm and from the territorial fund (*i. e.*, from the millage tax and from the students' fees) together amounts to about *$7,000.00, and this is all that the college has for general purposes, or for any purpose not expressly provided for by the Morrill Act.* Not only so, but all expense for the improvement of realty, for buildings, repairs, etc., even though incurred exclusively for the benefit of the experiment station, must be paid out of this $7,000.00, if it amounts to anything in excess of the $750.00 of the Hatch fund, which may be annually appropriated for buildings and repairs for the benefit of the experiment station. It should be borne in mind, then, that with the exception just noted in the case of the experiment station, every cent spent for land and improvements of realty,—buildings, repairs, etc.; for the expenses of the college administration;—printing, stationery, salaries of president, clerk, librarian, janitor; for the teaching of Spanish or any language other than English; for keeping up the library, athletic grounds, etc; for general furniture and the like,—all this must come out of the territorial fund or be provided for by special territorial appropriation.

In the early years of the college, before the institution had developed far enough to have an urgent need for all the Morrill fund, part of this fund remained unexpended and was loaned by the Board of Regents to the territorial fund to provide for the completion of buildings and improvements not sufficiently provided for by the territorial appropriation. Although it accrued to the benefit of the college, this was a misappropriation of the Morrill fund, and was in violation of the federal law. When the undersigned became president of the college, the amount of this misappropriation was, in round numbers, $8,000.00, and the authorities at Washington had demanded that it should be returned to the Morrill fund before the first day of July, 1900, and had stated that, if it were not so returned, the usual annual appropriation from the United States treasury (which forms the principal support of the college) would be withheld. At the same time a ruling was made by the United States Department of the Interior that henceforth all of the annual income from the Morrill fund must be expended each year, or the balance returned to the United States treasury.

In order, therefore, to prevent the closing of the college by reason of the withholding of the Federal appropriation, it became necessary to pay into the Morrill fund $8,000.00 before the expiration of the fiscal year 1899–1900; and in order that the college should obtain the benefit of this $8,000.00, and not have it returned to the United States treasury, it was necessary to expend it for college purposes before the 1st day of July, 1900.

By the closest economy, allowing the buildings and grounds to remain in a painful and almost dangerous state of disrepair, and by scrimping at every point, part of the necessary $8,000.00 was saved out of the territorial fund, and the remainder, between $5,000.00 and $6,000.00, was raised by a popular and wholly unsecured loan from the friends of the college in its immediate neighborhood. The secretary and treasurer of the board of regents contributed half of his annual salary to the purpose, and most of the business men and farmers of Las Cruces, Mesilla Park, and vicinity, and the greater number of the officers of the college and station advanced sums for the purpose, ranging from $500.00 to $25.00. As a result the whole $8,000.00 has been raised and paid over to the Morrill fund, and it has all been expended, either to increase the library or for additional equipment, mostly for the departments of agriculture and horticulture, mechanical engineering, and physics. We have now, however, a debt of honor amounting to about $5,500.00 to the friends who, in its hour of need, in order to keep the institution open, advanced this sum to the Territorial fund to relieve that fund of its obligation to the Morrill fund; and we trust that the Legislature will cheerfully appropriate this amount to enable us to discharge our indebtedness.

What the Institution Does for the Territory, and the Little that it Gets from It

We are in need of a special appropriation to enable us to put in a proper water supply for the institution, and for a building to serve as a library and gymnasium, or at least for bathing and dressing rooms for the students who exercise on the athletic field; but in view of the urgency of the need mentioned in the last paragraph, we should not complain if we received from the legislature this year no other special appropriation than sufficient to enable us to repay this loan, which has saved the life of the institution. It is well to remember, in this connection, that this institution brings into the territory from the federal treasury $40,000.00 a year ($25,000.00 Morrill fund and $15,000.00 Hatch fund) and provides by far the most thorough and extensive education of any institution of learning in the territory; that it ministers directly each year to more than 200 students,—representing 33 towns of the territory and nearly all of the counties,—and that it probably does more to bring people into the territory and interest them in it as a place of permanent residence than any other territorial institution. Students are in attendance from 14 states and territories of the union, and from several states of the Republic of Mexico—and all this at an expense to the territory of less than $7,000.00. The legislature has treated it far less liberally than any of the other institutions, although it is by far the strongest educational institution in the territory, both in its material equipment and in the personnel of its teaching force, which consists of twenty-five instructors, many of them trained in the best schools of Europe and America (including Cambridge, England, and Harvard, Columbia, University of Chicago, Iowa State College and a large number of other American colleges of creditable standing).

The Agricultural Course and Irrigation; Getting into Touch with the Farmers

But the financial embarrassment was by no means the only condition which gave your incoming president concern. He found that, although this institution was officially designated as the New Mexico College of Agriculture and Mechanic Arts, and although the chief purpose of the federal legislation which endowed it was to provide a thorough scientific and practical training for agriculturists, the so-called agricultural course in the college was little more than a farce, having little in its curriculum that was specifically agricultural, so that if a student should pursue this course with the greatest diligence he would not thereby be enabled to enter upon the simplest farming operations.

There was not a head of stock on the farm except the work horses; and, although cattle and sheep raising are among the chief industries of this territory, there was no instruction offered in any branch of animal husbandry.

Again, although irrigation is almost the exclusive method of agriculture in the territory, and the problems connected with irrigation are of the very first importance to the prosperity of the people of New Mexico, there was no instruction offered in scientific methods of irrigation, and the Agricultural Experiment Station had no irrigation expert on its staff.

Another somewhat discouraging condition was that our experiment station workers, although anxious to do what they could for the territory at large, were prevented from getting into touch with the ranchmen of the country by the vastness of our territory, the thinness of its population in proportion to its area, and the almost prohibitive railroad fares.

Something has been done this year to diminish this last named difficulty by obtaining free transportation for our station workers from the principal railroads, and one farmers' institute has already been held in the northwestern part of the territory, and arrangements made for future ones; and the crying evils mentioned in the second and third preceeding paragraphs have been remedied by the employment of an irrigation expert for the station and college, and by the thorough remodeling of the agricultural course in the light of the recommendations which are the result of the study of the subject to which the American Association of Agricultural Colleges and Experiment Stations has been devoting itself for the last few years, and, finally, by equipping the station farm with a small herd of cattle, sufficient for instructional, and for the simpler experimental purposes.

With our limited resources it is not an easy task to accomplish all that should be accomplished by a good agricultural college; and it is only by careful work in selecting our staff and by very economical use of our resources that we have been able to do as well as we have done. I feel that we are especially fortunate in having secured such a well trained, all-around agriculturist to fill the vacancy caused by Professor Keffer's resignation, as we have in the person of Mr. John J. Vernon, who came to us from the staff of the Iowa State College, of the agricultural course of which he is a graduate.

The Preparatory Department

To turn from the unfavorable conditions which met the incoming administration a year ago to the more pleasing ones, I would refer first to the preparatory department. For a number of reasons, this has always been a source of more or less dissatisfaction to the friends of the college. Its officers have generally felt that it was a misfortune that the difficulty which the citizens of New Mexico, especially the ranchmen and miners, have had in getting an adequate elementary education for their children at their own homes, should make it necessary for the college to provide a prepartory course running as far down as ours has done in the past; and partly because of this feeling, and partly because of the advanced age of many of the young people in our preparatory department, there had been a strong tendency in the early years of the institution to rush the young people through this inferno, the preparatory department, at an unduly rapid rate, giving them merely a smattering of what they should acquire in order to fit them properly to enter successfully upon the work of the college grades. I need hardly say that this resulted in very unsatisfactory college work; and it was therefore with much pleasure that I found that under the administration of Principal Larkin, who took charge of the preparatory department two years ago, the standard of thoroughness of the work of the preparatory department had been much improved. Rome was not built in a day, and the preparatory department is not yet perfect; it has been to some extent reorganized this year, and in accordance with my advice the lowest grade was discontinued at the beginning of last year. Its condition at present, however, is very promising, and the introduction of an admirable educational system of manual training into all of its grades, even the lowest, is one of the improvements upon which Mr. Larkin should especially be congratulated.

Let me say, in connection with the preparatory department, that I still believe that if the people of the neighboring town of Las Cruces could be brought to cooperate with us in such manner that its school moneys and a part, at least, of what we should otherwise spend on our preparatory department, could be combined to support a school at Las Cruces, which should take the place of, and, indeed, be the preparatory department of the college, under the educational direction of the college, the result would be greatly to the advantage both of the college and of the town of Las Cruces. The latter would have a well-equipped school, of which it could be proud, with a staff of trained teachers, a general equipment and a course of study which would otherwise be out of the question for it; and the college would have the problem of preparation for its courses solved more cheaply than could otherwise be done, without mingling the older and younger pupils on the college grounds, and in such a manner as to relieve the college buildings of the undue crowding which is now necessary. But while I feel that this cooperation would be desirable, I do not feel like making overtures to that end to the Las Cruces authorities, even though I have your permission to do so, so long as your honorable body is not unanimously favorable to the plan. Every new departure must meet with a certain amount of conservative distrust until it has proven itself, and if those who propose the change are not united among themselves, they can hardly expect to be very successful.

Athletics and Social Life and the Standard of Scholarship

Another thing of which we can speak with pleasure is the unquestionable enjoyment which our students get out of their life at the college. Our delightful location and wonderful climate contribute largely to this; but there can be no doubt that the unfailing kindly interest which a number of the faculty take in the recreations of the students contribute very largely to this result. Under Miss Horning's care, with her unfailing kindliness and tact, the life at the women's hall has been made happy and healthful to a high degree, and the weekly Saturday evening receptions at the hall have been a source of social culture as well as of pleasure to a great part of the student body.

Out of doors, too, the year has been a very enjoyable and successful one. Our football and basket-ball teams hold the championship of the territory; and the field day sports were well attended and proved very enjoyable.

All this is a source of serious congratulation. The richer and more enjoyable the life upon the campus, the more completely it ministers to the needs of mind and body, the less danger there will be that our students will be tempted to spend their hours of leisure in the drinking and gambling saloons of the neighboring town or in worse resorts.

But still there is another side, of which we must not lose sight. There is danger that the very pleasantness of the life here may lower the tone of scholarship; and I regret to say that I fear that the recreative and physical side of the life here has in the past absorbed too much of the interest of the students. Instead of being here primarilly to educate themselves and incidently to have a pleasant time, too many have been here primarily to have as good a time as possible and incidentally to get so much education as might be breathed in from the atmosphere or might stick to them without any effort on their own part. Success on the gridiron, the diamond, or the track; to win applause on the amateur stage or a place on the college paper; to be sought for in the dance or to be a leader in college politics, these have been too often the important things at college; while the pleasure and exhiliaration which comes from mastering some intellectual difficulty has been unknown, and the honor of distinguishing one's self as a student has been little regarded and not much sought for. It has been thought that perhaps the formal public recognition of excellence in scholarship would do something to counteract this unfortunate tendency, and accordingly I have obtained your consent to inaugurate a system of fellowships, scholarships and prizes.

I cannot pass from this subject without noticing that, as in so many colleges, a number of young men have been in attendance and have contributed largely to the winning of our athletic victories, who were here apparently for no other purpose. In my opinion, victories won in this way are a detriment, rather than a benefit, to the college. Youth is generous in its admiration (especially for the spectacular) and imitative to a large degree. A few "good fellows" who play a strong game but neglect their studies and their college duties generally, can do untold injury to a school by destroying its respect for scolarship and faithful attendance to duty. Victories won by the assistance of men who come to college at the beginning of the football term, fail in their studies, and leave at the end of the term, are very dearly won; they are little more honorable than victories won by paid professional players; and I shall do all that I can to weed out alleged students of this kind from the student body, even though as a result we may be unable to play against any outside team. If our students can not win victories for us, the college has no right to the credit of victories; and I propose that we shall go without until we can win them fairly by representative students, who are able to make at least a passing grade in their studies. This is the point of view taken nominally by all of the best colleges in the country, and it is lived up to by a few (I am sorry to say, a very few) of the very best institutions. It will be our policy in the future. I might say in this connection, for the comfort of those who fear that this policy may prove detrimental to our athletic interests, that the general physical development of the students of an institution is not really best fostered by having a wonderfully strong team for this game, and another for that, which can defeat anything put against them. The tendency of that sort of thing is toward semi-professionalism; the average student recognizes that he has no chance to get on the team, and so does not play the game; he goes without the physical exercise and training in alertness which give chief value to these games; and the few who do play do little else.

Conduct and Discipline

As this is my first year at the college, I am not myself in a position to judge, but, so far as I have been able to learn, the general standard of conduct has been higher than ever before. At my coming there was a discipline committee and a fairly long code of rules for the government of the student's conduct, infractions of which were punishable by demerit marks. At my suggestion the faculty has changed this system by the abolition of demerits and by the substitution for the printed code of rules of deportment, of a general statement that all students are expected to behave as gentlemen and as ladies. The president acts in the place of the discipline committee, and individual cases of misconduct are dealt with as the best judgment of the president and faculty suggest. As a rule a reprimand is found sufficient in the case of minor offenses; but occasionally some privilege is withdrawn, as in the case of a student guilty of disorder in the library who was thereupon deprived of the use of the library for a period. The theory upon which we now proceed is that misconduct is *not a regular part of the life of the college*, to be provided for by a system of recorded demerit marks, but an exceptional thing, to be met as such.

If the misconduct is serious enough to be of importance to the welfare of the institution or in its influence on the character of the student, it is punished with sufficient severity to make an impression. Otherwise a quiet talk with the offender is generally sufficient. To carry out such a system successfully, it is sometimes necessary to impose a more severe punishment than would be imposed if there were a graded list of offenses and punishments; the theory being that if misconduct is serious enough to be punished at all, it should be punished severely, the punishment being imposed not as retaliation against the offender but for the protection of the college community. Two serious punishments were inflicted during the year. One student was expelled for pilfering, and one for frequenting drinking and gambling saloons after having been warned publicly and privately against doing so, and after having promised that he would not. The latter case was aggravated by neglect of and failure in college work, and by misuse of trust funds belonging to a student organization. In the former case the recommendation of the faculty upon which your honorable body acted was made in accordance with the wish of the student body, which had previously made its recommendation to the faculty.

This latter fact may call attention to what I am inclined to regard as a most important advance in the matter of college discipline. Early in the year, after consultation with the faculty, I informed the students at our weekly assembly that it was our wish that they should take as large a part as possible in the administration of the college, in order that it might be, as largely as possible, a self-governing community. At the same time I told them that the board of regents was legally entrusted with the government of the institution, and that to the president and faculty they had entrusted the ordinary administration of affairs; that the regents were responsible to the authorities of the territory, and we of the faculty were responsible to the regents, for the administration of the institution; and that, in view of this fact, we could not legally turn over our authority to the students; but that we would like them to perfect an organization and consider all matters of student concern and make to us such recommendations as seemed to them proper; and I assured them that their recommendations would be received with much respect, and I felt confident that they would generally be acted upon, although I could not promise that they would always be followed. The students acted accordingly, and the spirit thus cultivated has already borne fruit, and will, I am confident, make the matter of college administration less and less difficult as time passes, and at the same time it will undoubtedly help to train our young people for the duties of citizenship. There is a student conference committee, composed of the president and several other professors, on behalf of the faculty, and of the officers of the United Student Body, in its behalf, which holds frequent meetings and which informally discusses any matter of general concern, and which generally makes recommendations thereupon either to the United Student Body or to the faculty, or to both. The system is working admirably at present, and I expect it to grow in effectiveness with the coming years. A similar, but somewhat more elaborate, system of self-government is being tried in the preparatory department.

Residence Hall for Boys and Young Men

There is great need of a residence hall for boys and young men, similar to that provided for the girls. This is needed, first, because the boarding accommodations in the neighborhood are insufficient (we are nearly three miles from the town of Las Cruces), and, secondly, because in the case of the younger and less responsible students there is need of oversight, that the students may become accustomed to regular hours of study, etc. In the absence of a legislative appropriation to enable us to build such a hall, it has been suggested that a private individual might build the hall for us if assured that we would use it, and the board charged would enable us to pay the rent and have a responsible man in charge. With your approval, we are seeing what can be done in this direction.

Land Appropriation

Of the 100,000 acres which the United States Land Commission for the Territory of New Mexico was authorized by the recent act of congress to appropriate for this institution, 6,893.62 acres of grazing land in the Mimbres river country and 5,704.24 acres of timber land in the Manzano mountains have so far been located for us. It is hoped that great care and diligence will be exercised in the choice and location of the lands to which we are still entitled. It would appear that we have not yet received as large a proportion of our lands as most of the other territorial institutions; but the mistake in the interpretation of the law which appeared to justify this delay having been corrected, it is hoped that we shall henceforth fare as well as our sister institutions.

Conclusion

For special reference to the affairs of the experiment station, I would refer to my report as director, and for financial details, I would respectfully refer to the financial reports of your secretary and treasurer on the several funds in his care, copies of which reports accompany this.

In conclusion, I desire to thank your honorable body for the confidence shown me in my administration of the affairs of the college and station, and the courtesy with which I have been treated by the gentlemen of the board.

Respectfully submitted,

Aug. 1, 1900. FREDERIC W. SANDERS.

TREASURER'S REPORT

Report on Territorial Funds for the Period Beginning December 1st, 1899, and Ending June 30th, 1900

FINANCIAL STATEMENT NO. 1==TERRITORIAL GENERAL FUND

RECEIPTS

From Territory	$4,016 36
Popular subscriptions received to cancel overdraft	5,730 00
Building, improvements and repairs; being refund from Station Fund to cover expenditures in last report	587 45

Matriculation and tuition fees....	1,160 85	
Interest on college funds	208 32	
Miscellaneous fees	143 10	
Sale of brick	33 30	
Fines on, and sales of, text books..	8 29	
		$11,887 67

DISBURSEMENTS

For Salaries	$1,324 23	
Furniture and property	71 68	
Stationery, printing and advertising	91 50	
Miscellaneous expenses	265 59	
Insurance	462 50	
Student labor	281 75	
Travelling expenses	194 65	
Heat, light and water	97 29	
Women's Hall	32 85	
Total disbursements	$2,822 04	
Overdraft, as shown by last annual report	$7,948 75	
		$10,770 79
Balance on hand		$ 1,116 88

FINANCIAL STATEMENT NO. 2—AZTEC SUB-STATION FUND

Receipts and disbursements for the period beginning Dec. 1st, 1899, and ending June 30th, 1900:

RECEIPTS

Balance on hand, as shown by last annual report	$ 267 87	
From Territory	739 38	
		$ 1,007 25

DISBURSEMENTS

For Salary	420 00	
Labor	117 95	
Supplies, blacksmithing, ditch dues, etc	54 60	
*Transfer to Station Fund	300 00	
		$ 892 55
Balance on hand		$ 114 70

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* This transfer was made to reimburse the Station Fund for disbursements made from that fund on account of this sub-station from March 1st to June 30th, 1899, contrary to the ruling of the Department of Agriculture at Washington, and while the sub-station was in receipt of territorial support.

FINANCIAL STATEMENT NO. 3--LAS VEGAS SUB-STATION FUND

Receipts and disbursements for the period beginning Dec. 1st, 1899, and ending June 30th, 1900:

RECEIPTS

Balance on hand, as shown by last annual report	$ 269 27	
From Territory	739 38	
		$ 1,008 65

DISBURSEMENTS

For Salary	$ 420 00	
Horse feed	29 32	
Supplies, blacksmithing, etc	74 32	
*Transfer to Station Fund	311 80	
		$ 835 44
Balance on hand		$ 173 21

FINANCIAL STATEMENT NO. 4==ROSWELL SUB=STATION FUND

Receipts and disbursements for the period beginning Dec. 1st, 1899, and ending June 30th, 1900:

RECEIPTS

Balance on hand, as shown by last annual report	977 67	
From Territory	739 38	
		$ 1,717 05

DISBURSEMENTS

For Drainage experiment	$ 610 92	
Ditch dues and livery	19 25	
		$ 630 17
Balance on hand		$ 1,085 88

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* This transfer was made to reimburse the Station Fund for disbursements made from that fund on account of this sub-station from March 1st to June 30th, 1899, contrary to the ruling of the Department of Agriculture at Washington, and while the sub-station was in receipt of territorial support.

TERRITORY OF NEW MEXICO, } ss.
COUNTY OF DONA ANA }

L. Bradford Prince, President of the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts, and Philip H. Curran, Secretary and Treasurer of the said Board of Regents, say that the foregoing financial statements do represent a true and correct statement of all moneys received and disbursed by and for the New Mexico College of Agriculture and Mechanic Arts, for and during the period named and the purposes stated in said financial statements, and that properly signed vouchers are on file for all disbursements shown by said financial statements to have been made.

IN WITNESS WHEREOF, we have hereunto attached the seal of the said Board of Regents, and subscribed our names.

L. BRADFORD PRINCE,
President of the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts.

[SEAL]

P. H. CURRAN,
Secretary and Treasurer of the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts.

ELEVENTH ANNUAL REPORT

of the

New Mexico Agricultural Experiment Station

for the year

1899-1900.

August 1st, 1900.

To the Hon. Miguel A. Otero, Governor of New Mexico.

SIR:—Pursuant to the third section of the Act of Congress of 1887 establishing Agricultural Experiment Stations, I have the honor to transmit to you in behalf of the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts, as the eleventh annual report of the Agricultural Experiment Station of New Mexico, the report of the Director, incorporating the reports of the several members of the Station Council, and the report of the Treasurer of this board.

Respectfully submitted,
P. H. CURRAN,
Secretary and Treasurer.

DIRECTORS' REPORT

Mesilla Park, N. M., August 1st, 1900.

To the Board of Regents of the New Mexico College of Agriculture and Mechanic Arts:

Gentlemen:—I have the honor to submit the following report of the work and condition of the New Mexico Agricultural Experiment station for the year ending June 30, 1900.

During the year the following bulletins have been published:

No. 31. A study of Soil Moisture, by Charles A. Keffer and John D. Tinsley.
No. 32. Grasses and Forage Crops, by Charles A. Keffer.
No. 33. Notes from the San Juan Sub-station, by Charles E. Mead.
No. 34. Principles of Water Analysis as applied to New Mexico Waters, by Arthur Goss.

The experimental work of the year is described in the several reports of the members of the station council herewith submitted, and some of the results of experimentation are set forth in the bulletins above mentioned. Aside from the specific experiments made, however, the director believes that the future effectiveness of the station has been considerably increased by the redistribution of the work of the station which has been made for the coming year, and by the considerable additions to the station equipment, especially in the departments of agriculture and soil physics and meteorology, which will be available for next year's work. Further than this, the concession of free transportation to members of the station staff engaged in experimental work and investigation, which the director has succeeded in obtaining from the principal railroads of the territory, will enable us to serve the public interests more perfectly than it has been possible for the station to do in the past.

The station staff which the director found upon assuming his duties July 1, 1899, was as follows:

Frederic W. Sanders, Ph. D., Director
Arthur Goss, M. S., A. C., Vice-Director and Chemist
T. D. A. Cockerell, Entomologist
John D. Tinsley, Soil Physicist and Meteorologist
E. O. Wooton, Botanist
Charles A. Keffer, Agriculturist and Horticulturist
R. Frederick Hare, M. S., Assistant Chemist
Fabian Garcia, B. S., Assistant Agriculturist and Horticulturist
Alfred M. Holt, M. S., Second Assistant Chemist
Humboldt Casad, Assistant Horticulturist and Agriculturist
Joseph F. Bennett, Jr., M. S., Assistant Botanist
Frank E. Lester, Registrar
Helen M. Macgregor, Stenographer
Charles E. Mead, B. S., Superintendent of San Juan Branch Experiment Station at Aztec
John Thornhill, Superintendent of the Las Vegas Branch Experiment Station at Las Vegas

The staff as thus constituted continued unchanged until the end of the year, except that Professor Keffer, who had come to the station less than a year before, upon the death of Professor Vestal, and who had taken hold of his duties with much energy and effectiveness, felt compelled to resign January 1st, on account of the unfavorable influence of our high altitude upon the health of an invalid member of his family. On the first of May his successor as Agriculturist, Professor Vernon, assumed charge of the department; and it is with much satisfaction that I am able to state that, notwithstanding the frequent changes which have taken place within eighteen months in this, the most important department of the station, and which have prevented us from carrying out an unbroken series of experiments, the agricultural department is now in the most promising condition that it has been in since the opening of this institution. Experiments in stock breeding, dairying, etc., which have never been attempted in the past (the station never having owned a head of stock, from its opening down to the present year, except the work horses and a few head of swine that were kept for a short time) will henceforth be possible; a good corral being added to the improvements of the station farm, and a beginning made with a small herd of carefully chosen cattle.

Aside from its lack of stock, in a stock-raising country, the director was impressed by the fact that in a country where agriculture was dependent upon irrigation, the territorial experiment station had no irrigation expert on its staff. This lack has also been remedied, and next year we shall have an irrigation engineer.

The station staff for the coming year will be as follows:

Frederic W. Sanders, Ph. D., Director
Arthur Goss, M. S., A. C., Vice-Director and Chemist
Theodore D. A. Cockerell, Consulting Entomologist
John D. Tinsley, B. S., Soil Physicist and Meteorologist
Elmer O. Wooton, A. M., Botanist
John J. Vernon, B. S. Agr., Agriculturist
W. M. Reed, C. E., Irrigation Engineer
Fabian Garcia, B. S., Horticulturist
R. Fred Hare, M. S., Assistant Chemist
Alfred M. Holt, M. S., Second Assistant Chemist
Joseph F. Bennett, Jr., M. S., Assistant Botanist
Charles E. Mead, B. S., Superintendent of San Juan Branch Experiment Station at Aztec
John Thornhill, Superintendent of Las Vegas Branch Experiment Station at Las Vegas
Francis E. Lester, Registrar
Helen M. Macgregor, Stenographer.

We need a better water supply, and we shall also need more land for our stock. The station farm nominally consists of about 270 acres, but only about 75 acres can be irrigated from the Rio Grande, and the expense of irrigating the upland has hitherto prevented any use of it for station purposes other than as a site for our station building, which is supplied with water by a well and windmill. As soon as practicable, I would recommend that an appropriation from the territory be asked for, to enable us to improve our farm. Only $750.00 of the United States funds can be used for this purpose in any one year, and all of this is needed next year to complete our corral.

Respectfully submitted,
FREDERIC W. SANDERS.

Report of the Agriculturist and Horticulturist

Frederic W. Sanders, Director:

SIR :—I have the honor to submit the following report of the work done by my predecessor for the fiscal year ending June 30th, 1900:

The writer took charge of the department on May 2nd, 1900, and the report is prepared from data left in this office.

The early part of the season of 1899 was very favorable for plant growth, but later in the season the drouth prevented perfect development of the crops. This, however, gave an excellent opportunity for studying the drouth-resisting properties of the soil in connection with some soil-moisture experiments.

Preliminary tests were made with grasses, and the work is being continued.

The codling moth has proven one of the most destructive enemies of the apple in this section. In 1898 the apple crop in the college orchard was destroyed for the purpose of ascertaining its effects upon the codling moth. Observations were made the following season. While the method has proven in this instance very beneficial, yet it cannot, without further demonstration, be recommended for practice. Some experiments with spraying, for the destruction of this enemy of the apple, are in progress this season.

The forestry plantations are in excellent condition, indicating that some valuable and much-needed work may be done in the way of introducing and testing trees and shrubs for wind-breaks and for ornamental planting.

Experiments in pruning on quite an extensive scale were begun, having in mind the determination of the proper amount of wood that should be removed from old trees. The results are being tabulated.

The year's record of the blossoming period of fruits was made as usual. Also, experiments with vegetables and brief variety tests are being conducted.

There seems to be much difficulty in securing perfect germination of corn; therefore a test of methods of planting has been inaugurated.

Fodder sorghum has proven exceedingly well adapted to this territory. It is hoped to determine this season the rate of seeding per acre, in this section, that will secure the best quality and greatest quantity of feed.

Plans are being laid for beginning studies in breeding and feeding. With cattle, attention will be given to the production of both beef and milk.

The following bulletins were issued by this department during the year:

Bulletin No. 31. A Study of Soil Moisture, by Charles A. Keffer and John D. Tinsley.

Bulletin No. 32. Grasses and Forage Crops, by Charles A. Keffer.

Bulletin No. 33. Notes from the San Juan Sub-Station, by Charles E. Mead.

Respectfully submitted,

July 1, 1900. JOHN J. VERNON.

Report of the Botanist

July 1, 1900.

Frederic W. Sanders, Ph. D., Director:

SIR:—The work as planned by this department for the year past embraces investigations in two special lines, a bulletin, and a continuation of the work on the herbarium, with an increase in the scope of the latter,—together with a general overhauling of the material now on hand.

The two special lines of investigation were as follows:

1st An attempt on a small scale to grow some of the native plains grasses with a view to ascertaining whether any of them might be made profitable pasture grasses under cultivation.

2d To make some measurements of the amount of water evaporated from the surfaces of the common native plants of the region as well as some of the cultivated crops, the intention of this investigation being to find out how much water is absolutely necessary to the various plants grown here.

In carrying out the first of these plans small plots of land averaging about 100 square feet were planted in grass during the third week in March. Five species of grass were planted, as follows: *Bouteloua eriopoda*, *Bouteloua curtipendula*, *Bouteloua hirsuta*, *Muhlenbergia texana* and *Hilaria mutica*. All but one of the species grow on the mesas at only a few feet higher elevation than the college farm, and the fifth (*B. hirsuta*) grows freely on the lower parts of the Organ mountains some twelve miles east of us and about 1500 ft. above our level. These grasses were dug up and brought in as quickly as possible and planted in bunches about six to eight inches apart in moist soil. After all had been planted they were irrigated. The plots were tended and irrigated from time to time, but the result was not favorable. Only one species (*Hilaria mutica*) has grown to amount to anything, and only a few plants of that. The probabilities are that the transplanting was done too late in the season. The experiment will be tried again next year and we hope for better results.

Owing to excess of college work, it was impossible to get the transpiration experiments carried out during school time, and they were postponed until the summer, as well as the completion of the bulletin proposed. Special work in the field as agent of the United States Division of Forestry will make it necessary to put this work still farther into the future.

The herbarium work has progressed fairly well. Some considerable portion of the mounted plants have been overhauled, and remounted in a much more permanent way, and about 3,500 new plants have been mounted and added to the herbarium. About 2,000 more plants have been obtained, many of them being valuable as co-types of western species, and are now awaiting attention.

E. O. WOOTON.

Report of the Chemist

JULY 1, 1900.

Director Frederic W. Sanders:

SIR:—The following is a brief summary of the work of the

Chemical Department of the experiment station from July 1, 1899, to July 1, 1900:

The sugar beet work carried on during 1897 and 1898 was continued during 1899. In the spring of '99, seed was sent to the sub-stations and to a number of farmers in different parts of the territory. In the fall, samples of the beets grown from this seed were analyzed in the laboratory. The results confirmed the conclusions reached from the work of 1897-98. It is evident that a number of sections of the territory can produce remarkably high grade beets, both as to sugar content and purity. This has been found to be especially true of the section around Santa Fe, the Animas valley in San Juan county, and portions of Mora and Taos counties. The sugar beet work was very materially aided by the United States Department of Agriculture, which furnished seed for distribution and appointed the chemist special agent of the United States Department of Agriculture, thus enabling us to frank samples through the mail free of cost.

In cooperation with Prof. Elwood Mead, of the irrigation investigation work, Office of Experiment Stations, United States Department of Agriculture, a study of the water of the Rio Grande and Pecos river has been carried on. Samples were secured from these streams at regular intervals for several months and analyzed.

Besides the work mentioned above, a considerable number of samples of water from different parts of the territory have also been analyzed during the year. The results of this work, together with other data in regard to waters of the territory that had been accumulating for several years past, and data from the cooperative work mentioned above, is published in bulletin form as Station Bulletin No. 34. This bulletin is now in press. Quite a large number of miscellaneous samples have also been analyzed during the year. These have included ores, natural fertilizing material, samples of natural saline deposits, a case of supposed poisoning of cattle, etc. In all, 189 samples have been analyzed between July 1, 1899, and July 1, 1900.

In July, the chemist attended the meetings of the A. A. C. & E. S. and A. O. A. C., held in San Francisco. A technical paper relating to the analysis of beef was presented at the latter meeting. The chemist had the honor of being named as one of the members of the executive committee of the A. O. A. C. for the ensuing year.

In August, the chemist (who is also vice-director) prepared, for the office of experiment stations, for use at the Paris exposition, a history of the New Mexico station from the time it was founded to Aug. 1, 1899.

The equipment of the department, within the time covered by this report, has been maintained, but, owing to lack of funds, not materially increased.

Very respectfully submitted,
ARTHUR GOSS,
Chemist and Vice-Director.

Report of the Entomologist

July 1, 1900.

Frederic W. Sanders, Ph. D., Director:

SIR:—The summer of 1899, and the month of June, 1900, were spent in and about Las Vegas. Most of this time was devoted to teaching, but considerable collections of insects were obtained, including a number of hitherto undescribed wild bees. The injurious insects observed in this region were few, the most destructive being the tent-caterpillar (*Clisiocampa fragilis*), which ate up nearly all the leaves of the quaking-aspens on the Pecos forest reserve. The cottony maple scale (*Pulvinaria innumerabilis*) was observed on shade trees in the streets of Las Vegas, but it did not seem to be seriously harmful, or to increase so rapidly as it does in some of the eastern cities.

The month of October, 1899, was spent in Salt River valley, Arizona, in the service of the Arizona experiment station. The results of this trip have been mostly set forth in a bulletin published by the Arizona station. The cost was borne by the Arizona station, and $50.00 were paid to the New Mexico station on account of the work done.

One result of the Arizona investigations was of some importance to New Mexico. For the first time, the entomologist was enabled to study the true Lower Sonoran Zone, and, as a result of this, to define the Middle Sonoran Zone of New Mexico more accurately than had hitherto been possible. It appeared that, as regards the native plants and animals, the Middle and Lower Sonoran Zones were so similar as to be scarcely separable, but that the horticultural conditions in the two zones were almost entirely diverse; hence the Middle Sonoran, which includes the Mesilla valley of New Mexico, may be fairly defined as a zone having the native flora of the Lower Sonoran, with the cultivated products of the Upper Sonoran. It is hoped that these investigations may tend to reconcile the differences of opinion which have existed regarding the mapping of the zones in New Mexico and Arizona, and to prevent further confusion. As was noted in the paper of the preceding year on vernal phenomena, the indications are that we have in the Middle Sonoran a peculiar region, for which we should develop new and specially adapted varieties of fruits and other cultivated plants.

In the spring of 1900 experiments were begun with a new waterproof white-wash, which was applied to the trunks of fruit trees, with the idea of filling up the cracks in which the larvæ of the codling moth pupate, and incidentally of killing any scale or other pest on the trunk of the tree. Only a small quantity of the material was available, as, although an order was placed for a larger supply, for some unexplained reason the material was not received.

Spraying experiments with white arsenic, for the destruction of the codling moth, were begun in the experiment station orchard in the spring of 1900, and are still in progress. This work was planned in cooperation with the horticulturist, and is being carried out by the horticultural department.

The most important new pest of the year was a beetle, an apparently new species of *Sphenophorus*, reported as very destructive to corn on the upper Gila, both in New Mexico and Arizona. Inasmuch as the measures to be taken against this insect depend largely on the discovery of its natural (native) food plant, it is recommended that the entomologist be sent to investigate the matter on the spot, at such time as may prove convenient.

For a number of years, the entomologist had interested himself in the pigments of insects and plants, without any particular expectation of economic results. Hence when, in May, 1900, Prof. E. O. Wooton drew his attention to the red coloring matter of the roots of the small borraginaceous plant *Eremocarya micrantha*, he was anxious to learn something of the properties of the pigment. A very brief investigation showed that the pigment belonged to the anthocyan series, and that it behaved exactly like litmus, turning red in the presence of acids, blue in the presence of alkalies The pigment was found to be superficial on the roots, and readily soluble in cold alcohol. The plants were extremely abundant close to the college, the supply being apparently unlimited. From these and other considerations, it seemed that we had here an excellent native substitute for litmus, which might very probably possess commercial value. Not only was the pigment purer than commercial litmus, but its preparation was very much simpler, and the roots were easily obtained. The matter is now being further investigated by the Division of Botany, United States Department of Agriculture, and we shall doubtless be informed of the results before very long.

Publications of the Entomologist

(A) JULY–DECEMBER, 1899

1. Variations of Helix hortensis at Rockport, Mass. Nautilus, July, 1899, p. 32.
2. Bifidaria armifera var. nov. ruidosensis. Nautilus, July, p. 36.
3. Education by Doing (Review of J. L. Tadd, New Methods in Education). Inland Educator, July, pp. 260-262.
4. A Troublesome Pest. Albuquerque Journal-Democrat, July 14.
5. (Letter on Hippodamia convergens). Albuquerque Journal-Democrat, July 16.

6. (With H. A. Pilsbry). Ashmunella, a new genus of Helices. Proc. Acad. Nat. Sci. Phila., pp. 188-194.

7. A First List of the Hymenopterous Families Tenthredinidæ, Siricidæ, Chrysididæ, Proctotrypidæ, Cynipidæ, Chalcididæ and Braconidæ collected in New Mexico. Trans. Kansas Academy of Science, xvi, pp. 212-216.

8. A reply to Mr. Marlatt's article on sources of error in recent work on Coccidæ. Science, July 21, pp. 86-88.

9. Coccid Pests on Sugar-Cane. Bull. Miscell. Information, Royal Gardens, Kew, pp. 6-7.

10. The New Mexico Biological Station. First catalogue New Mexico Normal University, pp. 50-52.

12. (With H. A. Pilsbry). Another new Ashmunella. Nautilus, Sept., pp. 49-50.

13. Some Notes on Coccidæ. Proc. Acad. Nat. Sci. Phila., pp. 259-275.

14. A New Dactylopius (fam. Coccidæ) from Arizona. Canad. Entom., Sept., p. 267.

15. A New Meloid Beetle Parasitic on Anthophora. Psyche, Oct., pp. 416-417.

16. The Panurgine Bees. Psyche, Oct., p. 419.

17. (On the insect pests of Salt River Valley, Arizona). Arizona Republican, Oct. 22, p. 8.

18. Notes on Australian Coccidæ, iii. Two New Species and a New Variety. Victorian Naturalist, Sept., pp. 88-89.

19. Tables for the determination of the genera of Coccidæ. Canad. Entom., Oct., pp. 273-279; Nov., pp. 330-333.

20. A New Noctuid of the Genus Cirrophanus. Canad. Entom., Oct., p. 288.

21. (With P. J. Parrott). (Description of Antonina Nortoni., n. sp.) Canad. Entom., Oct., pp. 280-281.

22. (Table for the separation of the forms of Aspidiotus allied to A. cydoniæ) in C. L. Marlatt, Science, Nov. 3, p. 658.

23. Polygyra triodontoides (really texasiana, var.) in New Mexico. Nautilus, Nov., p. 84.

24. New Species of Andrena from Kansas. Entom. News, Nov., pp. 253-255.

25. Psocus speciosus, Aaron. Entom. News, Nov., p. 266.

26. The Species of the Bee—Genus Dieunomia. Entomologist. Nov., pp. 265-266.

27. (With Wilmatte Porter). Contributions from the New Mexico Biological Station, viii. The New Mexico Bees of the Genus Bombus. Ann. and Mag. of Nat. Hist., Nov., pp. 386-393.

28. The Coccidæ of Mauritius. (Review of paper by d'Emmerez de Charmoy). Amer. Naturalist, Nov., pp. 899-901.

29. Children and Sugar-Beets: A Parallel? Inland Educator, Dec., p. 204.

30. An Alien Clematis in New Mexico. Science, Dec. 15, pp. 898-899.

31. A Coccid from the Far North. Canad. Entom., Dec., pp. 369-370.

32. (With Wilmatte Porter). Contributions from the New Mexico Biological Station, vii. Observations on Bees, with descriptions of new genera and species. Ann. and Mag. of Nat. Hist., Dec., pp. 403-421.

33. Coccidology. (Review of E. E. Green, Coccidæ of Ceylon). Natural Science, Oct., pp. 295-296.

34. New Mexico Biol. Station. Natural Science, Dec , p. 463.

35. New Records of Coccidæ. Journ. N. Y. Ent. Soc., Dec., pp. 257-259.

36. Aleurodidæ. Biologia Centrali-Americana, Zoologia, Hemip.-Homop., vol. 2, pt. 2, p. 1.

37. Coccidæ. Tom. cit., pp. 2-33.

(B) JANUARY JUNE, 1900

38. The Name Leonia. Psyche, Jan., p. 11.

39. The Danger of Introducing Insects on Trees. Univ. of Ariz., Agric. Exp. Sta., Timely Hints for Farmers, No. 7, Jan. 1.

40. A Horticultural Quarantine Bill. Albuquerque Journal-Democrat, Jan. 16.

41. Winter Remedies for Injurious Insects. Univ. of Ariz. Agric. Exp. Sta., Timely Hints for Farmers, No. 9, Feb. 1.

42. (With H. A. Pilsbry). Description of Zonitoides neomexicanus, n. sp. Nautilus, Feb., pp. 114-115.

43. Limax coccineus, Gistel. Nautilus, Feb., pp. 117-118.

44. What is the proper name of Lophyrus, Latreille? Entomologist, Feb., pp. 40-41.

45. [Notice of Aquilegia desertorum] in M. Cooper. Southwest. Feb., p. 89.

46. List of Dipterous Galls described from New Mexico. Southwest, Feb., p. 91.

47. Notes on Some Southwestern Plants. Bull. Torrey Bot. Club, Feb., pp. 87-89.

48. Note on the Coccid Genus Oudablis, Signoret. Entomologist, March, pp. 85-87.

49. New Insects from Arizona; and a New Bee from Mexico. Entomologist, March, pp. 61-66.

50. Notes on Veronicella. Nautilus, March, p. 131.

51. (With T. Pergande). List of Coccidæ collected by Mr. A. Busck in Puerto Rico, 1899. Bull. 22, N. S., Div. Entomology, Dept. Agriculture, pp. 92-93.

52. A New Oak Gall from New Mexico. Canad. Entom., March, pp. 91-92.

53. The Coccidæ of New Zealand. Nature, Feb. 15, pp. 367-368.

54. Note on the Asiatic Species of Philomycus. Journ. of Malacology, March, p. 127.

55. Table of North American Kermes, based on external characters. Psyche, April, pp. 44-45.

56. List of the Hymenopterous Galls reported from New Mexico. The Southwest, March, pp. 112-113.

57. Eutanypus in New Mexico. Entom. News, April, p. 439.

58. Some Insect Pests of Salt River Valley, and the Remedies for Them. Bull. 32, Arizona Experiment Station, pp. 271-295.

59. The Lower and Middle Sonoran Zones in Arizona and New Mexico. American Naturalist, April, pp. 285 293.

60. Note on the Pigments of the Coccid Chionaspis furfura, Fitch. Science, April 27, p. 671.

61. Some Plants of New Mexico. Botanical Gazette, April, pp. 280-281.

62. Four New Coccidæ from Arizona. Canad. Entom., May, pp. 129-132.

63. Notes on the Las Vegas Crayfish. The Southwest, April, p. 133.

64. [On the Varieties of Castillcia integra] in M. Cooper. The Southwest, April, p. 134.

65. Economic Entomology in Arizona. Science Gossip, May, pp. 366-367.

66. The Cottonwood Web-Worm (Hyphantria). N. M. Agr. College, Press Bull. No. 35, Dona Ana County Republican, May 19, and other newspapers.

67. Note on Some Red and Blue Pigments. Nature, May 10, p. 31.

68. Note on Collops bipunctatus. Bull. 33, N. M. Agr. Exp. Station, pp. 50-51.

69. Observations on Bees collected at Las Vegas, New Mexico, and in the adjacent mountains. Ann. Mag. Nat. Hist., May, pp. 401-416.

70. Some Coccidæ Quarantined at San Francisco. Psyche, June, pp. 70-72.

T. D. A. COCKERELL.

Report of the Soil Physicist and Meteorologist

July 1, 1900.

Dr. F. W. Sanders, Director:

DEAR SIR:—I beg leave to submit the following report on the work done in this department from July 1, 1899, to June 30, 1900.

A—SOIL MOISTURE

The observations on the moisture in the soil of the corn experiment, begun in the spring of 1899, continued until the corn was harvested, Oct. 5th, 1899.

These observations embraced the study of the per cent of moisture shown by the electrical soil hygrometer, together with monthly checks made by boring samples and determining the moisture by drying. The results of the last season were tabulated and platted, and the most valuable part of the data is embodied in Bulletin No. 31, issued in cooperation with the Agricultural Department.

The electrodes were installed again, in the same plats, in May 1900, and the observations are being continued in the same manner as during last season. Last season the moisture was measured at depths of 6 to 9 inches and 21 to 24 inches; this season the measurements are being made at 3 to 6 inches, and 15 to 18 inches.

In addition to the above, samples have been taken in various other places on the station farm and their moisture content determined.

Weekly samples were received, until October, from the Aztec and Las Vegas sub-stations, and their moisture content determined.

B—AMOUNT OF WATER USED IN IRRIGATION

Records were kept for the Division of Irrigation inquiry of the U. S. Department of Agriculture on the amount of water used in irrigating the Experiment Station Orchard until December, 1899.

C—ALKALI AND DRAINAGE INVESTIGATIONS

Owing to the resignation of the Agriculturist the proposed work on reclaiming alkali land by drainage was put in charge of this department. A month, during March and April, 1900, was spent at the Roswell sub-station on this work. About four acres of land, lying adjacent to the Hondo river, on the Roswell sub-station farm was underlaid with tile. The experiment embraces the use of tiles of various sizes laid at different depths and distances apart. Numerous samples of the soil on this plat and the adjoining land were taken, and the amount of soluble salt determined by the electrical method. This land will, after drying out, be flooded and allowed to drain until the amount of soluble salts is reduced to a point where they will not be injurious to plant growth. Various crops will then be planted on this land.

Numerous samples from the station farm have been tested for salts, but in no case has an injurious amount been found.

Considerable difficulty having been experienced in getting samples of the dry soils of the Rio Grande Valley, the writer has modified the ordinary wood auger by putting a movable brass caseing on it. This devise has proved very satisfactory.

D—METEOROLOGY

The meteorological instruments have been moved from the farm buildings and placed in and near the Science Hall. The usual observations have been taken by Mr. A. M. Sanchez, who has also rendered valuable assistance in the soil work, and reported to the New Mexico section of the U. S. weather bureau.

In addition to the regular meteorological observations the rate of evaporation from a free water surface, a three foot cubical tank sunk flush with the ground, has been measured weekly.

E — MISCELLANEOUS

A portion of November and December, 1899, was spent, through the kindness of the chief, in the laboratories of the Division of Soils U. S. Department of Agriculture in Washington. This time was devoted mainly to the study of "Alkali" problems. Several investigations bearing upon the "Alkali" problems are under way, and data is being collected on the waters used in irrigation. A press bulletin discussing the variability in growth of the alfalfa on the Experiment Station farm was issued a short time ago. The correspondence relating to the work of this department has received the necessary attention.

Respectfully submitted,

J. D. TINSLEY.

Report of Superintendent of San Juan Sub=Station

Frederic W. Sanders, Director:

SIR:—I beg leave to submit herewith a condensed report of the work carried on at the San Juan Sub-Station during the fiscal year ending June 30, 1900.

Since my connection with the station a complete system of record keeping has been inaugurated. The cultivated portion of the station has been divided into regular acre plats which have again been subdivided into definite portions of acres and used according to the requirements of the individual experiment.

The following is a brief outline of the work performed:

I—GRAINS

1—Oats:

a. Testing two standard varieties for comparative yield and manner of growth.

b. Different quantities of seed per acre, one and two bushels, using the same variety of grain.

c. Noting the effect, from plowing under various soiling crops, upon the growth and yield of the respective varieties.

d. Checks against the plats fertilized with green manures.

2—Corn:

a. Test of nine varieties of field corn for yield, season of maturity, and quality of fodder produced.

b. Spring plowing *vs.* fall plowing, using same variety of grain and same methods of cultivation.

c. Fertilizer tests, with: (1) barnyard manure; and (2) with gypsum and barnyard manure.

II—FORAGE CROPS

1—Non-saccharine Sorghums:

a. Test of seven varieties for their value as forage crops in this section.

b. Noting season of maturity and quality of fodder produced.

2—Sorghums:

a. Test of four varieties for their value as forage crops.

b. Different manner of planting each variety: (1) Broadcast, for fodder; (2) Drilled, for fodder; and (3) In "hills," for cane and fodder.

c. Noting comparative yields of seed and fodder; manner of growth and respective size of canes of each variety and "planting."

d. Noting the effects of partially reclaimed black alkali soils upon the growth of two varieties.

e. Check against the plats in partially reclaimed black alkali soil.

III—VEGETABLES

1—Tomatoes:

a. Test of fourteen varieties for yield, season of maturity and quality of fruit produced.

2—Sweet Potatoes:

a. Testing the adaptability of five varieties to our climate and short seasons.

b. Noting yield of each variety.

3—Sugar Beets:

a. Test of two varieties.

b. Different dates of planting each variety.

c. Noting yield, sugar content, and purity of each variety and "planting."

4—Potatoes:

Test of eight varieties for yield, manner of growth, relative earliness and resistant power to blight.

IV—SOILING CROPS

1—Hairy vetch (*Vicia villosa*)

a. Plowing under for tomatoes.

b. Plowing under for oats.

2—Peas:

Plowing under for oats.

3—Clover:

Plowing under crimson clover for tomatoes.

V—STUDYING PLANT DISEASES

1—Tomato Blight:

a. Bacterial.

b. Fungus.

2—Potato Blight:

VI—EXPERIMENTING FOR THE RECLAMATION OF BLACK ALKALI SOILS (*chico spots*)

1—By the application of:

a. Gypsum.

b. Gypsum and barnyard manure.

c. Gypsum followed by plowing under different soiling crops.

2—Drainage:

VII—GRASSES

1—Brome Grass (*Bromus inermis*):

a. Drought-resistant power.

b. Manner of growth, yield etc., when irrigated.

2—Bermuda Grass:
Noting its value for pasturage and for a lawn grass.

VIII—INSECTICIDES

1—Paris Green:

a. Spraying for the "Northern tobacco worm" *(Protoparce celeus)*.

b. Spraying for the "bean bug" (*Epilachna corrupta*).

c. Spraying for the "Colorado potato beetle" (*Doryphora* 10-*lineata*).

In addition to the above lines of experimentation, three and one-half acres have been harvested to supply hay for stock. About six acres of "new" land have been "broken" and seeded to alfalfa. The total area now in cultivation is about twenty-five acres.

Some of the experiments undertaken were necessarily discontinued on account of the lack of sufficient means to carry them to successful issues; and only those of the most importance to the farmers and such as were within our financial reach have been completed.

In cooperation with Professor Keffer this station instituted and carried to successful completion a Farmers' Institute which was held in Aztec, New Mexico, on November 27th and 28th, 1899. Great interest was manifested by the local farmers of the county and the meetings were well attended throughout the session. A permanent organization was effected and constitution and by-laws governing the same are now being drafted.

The Station is in need of a small additional appropriation for painting and repairing the farm buildings and for the erection of a small wagon shed.

Respectfully submitted,
C. E. MEAD,
July 1, 1900. Superintendent.

Report of the Superintendent of the Las Vegas Sub-Station

Frederic W. Sanders, Ph. D., Director:

SIR:—I beg to submit herewith my annual report of the Las Vegas Sub-Station, being for the year 1899. In doing so, permit me first to state that the season at Las Vegas and in this region was the dryest and most unfavorable of any for many years past; the old settlers claim that it was the very dryest season ever experienced in San Miguel county. By reason of the drouth, crops were almost a failure and the Experimental Station suffered with the rest of the country by reason of the drouth.

During the year I have made the following observations relating to the weather at the Station, having kept a daily record of the same.

January 1st to 5th: fair; windy and cold.
January 5th to 8th: fair.
January 8th: fair and cloudy.
January 9th to 11th: fair.
January 11th: snow.
January 12 to 14th: fair.
January 14: fair and and cloudy.
January 15th: fair.
January 16th to 18th: windy with snow.
January 18th to 21st: fair.
January 22nd: snow.
January 23rd to 25th: fair, cold and windy.
January 25th to 28th: fair.
January 28th to 31st: fair, cold and windy.

February 1st to 5th: fair, cold and windy.
February 5th: snow, four inches.
February 6th: snow and very cold.
February 7th to 10th: fair and cold.
February 10th: cold and windy.
February 11th: snow and very cold.
February 12th: fair.
February 13th: fair, snow in the afternoon.
February 14th to 17th: fair.
February 17th to 23rd: fair and windy.
February 23rd: very cold and windy.
February 24th: fair, windy, snow in evening.

February 25th: cloudy and snow three inches.
February 26th: cloudy and cold.
February 27th and 28th: fair.

March 1st to 5th: fair and very windy.
March 5th: windy with snow.
March 6th to 9th: fair.
March 9th to 16th: fair and windy.
March 16th: fair.
March 17th to 26th: fair and windy.
March 26th to 28th: snow.
March 28th: cloudy.
March 29th: fair and windy.
March 30th: cloudy and snow.
March 31st: cloudy and cold.

April 1st to 4th: fair.
April 4th: cloudy and cold.
April 5th: cold and windy with snow.
April 6th to 14th: fair.
April 14th: cloudy, cold and windy.
April 15th: rain in afternoon.
April 16th: cloudy.
April 17th to 19th: fair and windy.
April 19th: cloudy, with snow.
April 20th to 30th: fair and windy.

May 1st to 8th: fair and windy.
May 8th: slight rain.
May 9th to 11th: fair and windy.
May 11th: fair.
May 12th to 17th: fair and windy.
May 17th: cloudy and windy.
May 18th: fair and windy.
May 19th: cloudy and windy.
May 20th: fair and windy.
May 21st: fair.
May 22nd to 26th: warm and cloudy.
May 26th to 31st: warm and windy.

June 1st to 6th: fair, dry and very windy.
June 6th: cloudy, thunder shower for 20 minutes.
June 7th and 8th: warm, dry and windy.
June 9th: cloudy, windy, thunder storm and hail.
June 10th: very hot, thunder storm and hail.
June 11th to 14th: warm, dry and windy.
June 14th to 17th: cloudy, hot and rain.
June 17th to 23rd: fair and hot.
June 23rd: cloudy and rain.
June 24th to 26th: cloudy and rain.
June 26th to 30th: hot and cloudy.

July 1st: very hot and sultry.
July 2nd to 7th: cloudy and hot.
July 7th: cloudy and rain.
July 8th: cloudy, hot and sultry.
July 9th: cloudy, slight frost.
July 10th to 13th: cloudy.
July 13th: cloudy and rain.
July 14th to 20th: cloudy and rain.
July 20th to 24th: morning fair, afternoon rain.
July 24th to 28th: fair.
July 28th to 30th: rain.
July 31st: fair and warm.

August 1st to 7th: warm, and rain in afternoon.
August 7th to 30th: fair.

September 1st to 6th: fair and hot.
September 6th: cloudy.
September 7th: fair.
September 8th to 10th: rain.
September 10th to 15th: fair.
September 15th to 17th: rain.
September 17th to 30th: fair.

October 1st: fair, with frost.
October 2nd to 5th: cloudy, rain and cold night.
October 5th to 9th: fair.
October 9th to 15th: fair and windy.

October 15th: fair and windy; first hard frost.
October 16th to 26th: fair, cold nights.
October 26th: cloudy, with rain and snow.
October 27th to 31st; fair.
October 31st: cloudy, with snow.

November 1st to 15th: fair.
November 15th: cloudy, cold rain.
November 16th to 18th: fair.
November 18th to 20th: cloudy, with rain.
November 20th: clear, cold day.
November 21st to 30th: fair.

December 1st to 16th: fair.
December 16th: cold, wind and snow.
December 17th: fair.
December 18th: wind and snow.
December 19th: cold.
December 20th: cold and wind.
December 21st, to 31st: fair.

LABOR PERFORMED

I have kept a record of each day's labor on the farm and in superintending the building of the barn. This record is at all times open to inspection by any of the officers, or any other person. Knowing from past observation that time spent in manuring grounds intended for cultivation, is well expended, I have hauled onto the station grounds from Las Vegas 108 loads of manure, and find the return for such improvement will be ample justification for a thorough fertilization of the grounds intended to be used for experimental purposes.

IMPROVEMENTS

During the year there has been constructed on the foundations of the old barn heretofore destroyed by fire, a new one, 32x56 feet, outside measurement, with basement below for stables, wagons, farming utensils and storage. This structure is on the plans substantially as shown in my last annual report and was built at a total cost of nine hundred and sixty dollars, which is less than the amount received on the barn consumed by fire.

EXPERIMENTS

I experimented somewhat with Irish potatoes of several different varieties, a few of each. They were planted in deep plowed ground, but planted shallow, One-half of the patch was mulched with straw and manure, while the other was not. The season was too dry to make a fair test, but even with these unfavorable conditions, the result reached indicated that in a fair season potatoes can be raised in this locality with reasonable success by mulching the ground, and I suggest that this year at all the stations such an experiment be thoroughly tried. If we can devise any means whereby Irish potatoes, even sufficient to supply the home demand, can be produced, it will be an immense gain for New Mexico; and I am impressed that by deep plowing and shallow planting and thorough mulching with straw and manure success may be attained; at least it is worth a fair trial.

RESERVOIRS

In my last report I emphasized, at some length, the importance of storage reservoirs, and my additional observation confirms me in the belief that there is nothing so important to this Station as the widening, deepening and extending of the reservoir system. In July, 1899, F.W. Sanders, President and Director, accompanied by Hon. R. E. Twitchell, one of the Board of Regents, made a visit to the Sub-Station, and also Prof. Charles A. Keffer, for observation and consultation. Upon examination, it was determined to add to the present reservoir by sections.

The old reservoir was about two hundred feet square and of an average depth of eight feet. It was deemed best to add four more sections to this reservoir, each of about the same averge size, constructing the same from time to time as rapidly as time and means would allow. Acting on the direction given at this conference, I began the construction of the first addition to the reservoir by throwing out wings of earth in extension of the present embankment, using the earth scraped out from the bottom of the reservoir to complete the wings, and I have already completed three hundred feet on the the lower side, which almost doubles the capacity of the reservoir, which is so located that additions can be made by the extension of the wings and excavations from the bottom. A rough draft* is attached hereto showing approximately the reservoir as it is and the improvements purposed which are to be made from time to time.

I most earnestly recommend that every dollar possible be expended in enlarging the reservoir. Water for irrigation is of prime importance and with an abundance of water the sub-station ought to be, and I believe can be made, self supporting.

The soil at the station is excellent and the land lies nicely, and by judicious management in the water supply there is no reason why the sub-station may not be made a success. The source of supply for water is the ditch of the Gallinas Canal and Water Storage and Irrigation Company, which comes from the Gallinas River, and in which company the station has stock.

To better facilitate water distribution and prevent washing from the Mora Road, I have constructed along the grounds parallel with said road, an embankment of about four hundred and fifty feet, and on the top of the embankment a ditch to irrigate lands to the north of the house at the station. This became necessary because of the depression between the north and the south sides of the land, the embankment being used to carry the water over such depression. The middle of the embankment is about four feet in height. It has required considerable work to construct this embankment, but the benefit will more than justify it.

At the last session of the legislature I prepared and presented with the concurrence of your honorable body, to the several members of that honorable assembly, a paper setting out the necessity of legislation in the interest of the several experiment stations, and would recommend that the same course be again pursued at the next session of the legislature, should such action meet the approval of your body.

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* Ommitted in printing.

The well spoken of in my last report has held out with an ample and steady supply of water. If a way could be found to establish a wind mill at the well, it would not only add to the convenience of the property, but furnish considerable additional water.

While I am not in favor of making large expenditures for the mere convenience and comfort of the superintendent, yet a reasonable provision in that respect is required. The house now occupied is one constructed by repairing an old log stable, never intended for a dwelling house, and it is impossible to keep the same either comfortable or in presentable condition. It was intended in the first instance as a temporary substitute, and is located far from the well and barn and altogether unfit for use. I would not advise the expenditure of any large sum in a dwelling, or in costly material, but I do urge upon your honorable body that an adobe house can be constructed near the well and barn, at a slight cost, which will not only add to the value of the property, but will make the same tenable. An adobe house placed on a solid, stone foundation, and with a good roof extending well over the walls, can be constructed at an expense of from nine to twelve hundred dollars, and such a house would answer all purposes for many years to come. The stone can be procured near by, and the adobe on the ground, and such a house can be made not only substantial, but so as to be very presentable in appearance.

To conclude my suggestions for the year, I advise that all possible expenditures be made during the ensuing year for storage reservoirs and substanials, and the least possible for ornaments.

Respectfully submitted,

JOHN THORNHILL, Superintendent.

February, 1900.

Frederic W. Sanders, Ph. D., Director:

DEAR SIR: The following is a report of crops planted at the Las Vegas Sub-Station this Spring, ending June 30th, 1900.

1 Plot of 3,000 square feet Okanagan Val. Chaff Wheat.
1 “ “ “ “ Haynes Pedigree Blue Stem Wheat.
1 Plot of 4 acres White Russian Oats.
1 “ 2 “ “ Lincoln “
1 “ 3,000 square feet Great Northern Oats.
1 “ “ “ “ Welcome Oats.
1 “ “ “ “ Imp. White Russian Oats.
1 “ “ “ “ Salzer Silver Mine Oats.
1 “ “ “ “ White Bonanza Oats.
1 “ “ “ “ Big Four Oats.
1 “ 13,900 “ “ Clark Early Mastodon Field Corn.
1 “ “ “ “ Iowa Silver Mine Field Corn.
1 “ “ “ “ Wiss Earliest White Dent Field Corn.
1 “ “ “ “ Golden Triumph Field Corn.
1 “ “ “ “ Golden IXL Yellow Dent Field Corn.
1 “ “ “ “ All Gold Field Corn.
1 “ “ “ “ Iowa Gold Mine Field Corn.
1 “ 8 Acres Reseeded with 200 lbs. of Alfalfa seed.
1 “ 1-20 “ Licht Sugar Beet.
1 “ 1-20 “ Vilmorin “
1 “ 1-20 “ Dippe “
1 “ 1-20 “ Strandes “
1 “ 1-20 “ Mrozinski No. I Sugar Beet.
1 “ 1-20 “ “ No. II “ “
1 “ 50x200 feet Espersitte or Sanpoin.
1 “ 100x200 “ Timothy.
1 “ 54x200 “ Italian Rye.
1 “ 60x200 “ Superior English Rye.
1 “ 20x200 “ Red Fescue.
1 “ 50x200 “ Meadow Fescue.
1 “ 45x200 “ Fall Meadow Fescue.

1 " 60x200 " Superior Orchard Grass.
1 " 60x200 " Giant Spury.
1 " 60x200 " New Japanese Buckwheat.

The above crops are in good growing condition with the exception of the New Japanese Buckwheat, which was destroyed by the hail on June 23rd.

Yours truly,
July 1, 1900. JOHN THORNHILL.

TREASURER'S REPORT*

Agricultural Experiment Station of the New Mexico College of Agriculture and Mechanic Arts
In Account With
The United States Appropriation, 1899-1900

Dr.

To receipts from the Treasurer of the United States as per appropriation for fiscal year ending June 30, 1900, as per Act of Congress approved March 2, 1887 .... $15,000.00.

Cr.

By	Salaries	1	$9,038 44
	Labor	2	1,587 05
	Publications	3	549 19
	Postage and stationery	4	379 18
	Freight and express	5	175 60
	Heat, light and water	6	91 40
	Chemical supplies	7	168 32
	Seeds, plants, and sundry supplies	8	272 06
	Fertilizers	9	52 25
	Feeding stuffs	10	95 40
	Library	11	74 08
	Tools, implements and machinery	12	133 35
	Furniture and fixtures	13	128 11
	Scientific apparatus	14	323 94
	Live Stock	15	732 40
	Travelling expenses	16	519 11
	Contingent expenses	17	56 10
	Buildings and repairs	18	624 02
	Balance		..
	Total		$15,000 00

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*Detailed list of items omitted in printing.

To receipts from other sources than the United States, for the year ending June 30, 1900:		
Farm products	$ 153 58	
Miscellaneous	661 80	
		Dr. 815 38
By building and repairs		Cr. 815 38

We, the undersigned, duly appointed Auditors of the Corporation, do hereby certify that we have examined the books and accounts of the New Mexico Agricultural Experiment Station for the fiscal year ending June 30, 1900; that we have found the same well kept and classified as above, and that the receipts for the year from the Treasurer of the United States are shown to have been $15,000.00, and the corresponding disbursements $15,000.00; for all of which proper vouchers are on file and have been by us examined and found correct, thus leaving no balance on hand.

And we further certify that the expenditures have been solely for the purposes set forth in the Act of Congress approved March 2, 1887.

[SEAL]

P. H. CURRAN, } Auditors.
P. MORENO, }

Attest: F. E. LESTER,
Custodian.

MORRILL REPORTS FOR 1899-1900

Tenth Annual Report of the President of the College and the Treasurer of the Board of Regents to the Secretary of the Interior and the Secretary of Agriculture, Under Act of Congress of August 30, 1890

Morrill Fund

For the Endowment of Colleges of Agriculture and Mechanic Arts

REPORT OF THE PRESIDENT OF THE COLLEGE

I. Condition and Progress of the Institution for the year ended June 30th, 1900:

The course of study has been revised, so as to make a strong and well balanced course in Agriculture, beginning with the academic year 1900-01, instead of the merely nominal course heretofore offered. Heretofore there had been no live stock on the college farm except the work horses, and of course all that related to animal husbandry had to be omitted from the course in Agriculture; but even such theoretical instruction in Scientific Agriculture as might have been given was not offered, and the strength of the institution went into the "scientific" and mechanical engineering courses. Henceforth a good course in Agriculture will be offered; the addition of a Professor of Civil Engineering to the instructional force will make the civil engineering course a reality instead of a name; the mechanical engineering course will be stronger in the higher and postgraduate grades, by reason of added equipment and an enlarged staff; and the general, or "scientific," course has been so revised as to offer at the same time a more thorough and uniform educational foundation for all who take it, and a wider range of election within the prescribed limits.

A large adobe corral, for the accommodation of horses, cattle, feed, agricultural implements, etc., with a well and wind mill, is partly completed, and will cost, when finished, about $2,000.00.

The institution is now entirely free from legal debt; the equipment has been increased to the extent of some $8,000.00; the attendance is good and representative of the whole Territory, with no small number from other parts of the United States and from Mexico; and the character of the scholarship is slowly but surely improving.

One Farmers' Institute was held, in November, 1899, at Aztec, in the northwestern part of the Territory. This was gotten up by the Superintendent of our Branch Station at Aztec, and largely conducted by our Professor of Agriculture, Mr. Keffer. Professor Keffer was with the institution less than a year, when for family reasons he was obliged to leave us, and the frequent changes in the headship of our Agricultural department (three professors within 18 months) have conspired with the sparce population of the Territory and its great extent to prevent us from doing much in the way of institute work. We have at last succeeded, however, in inducing the principal railroads of the Territory to grant free transportation to the members of our staff, when engaged on Agricultural Experiment Station business, and it is confidently believed that this concession of the railroads will enable us to do more in the way of institute work and other extension work than ever before.

II. Receipts for and during the year ended June 30th, 1900:

1.	Balance on hand July 1, 1899	$ 483 32
2.	State aid:	
	a. Income from endowment granted by state	....
	b. Appropriation for current expenses	6,710 76
	c. Appropriations for building or for other special purposes	....
3.	Federal aid:	
	a. Income from land grant, act of July 2, 1862	....
	b. Additional endowment, act of August 30, 1890	25,000 00

c. For experiment stations, act of March 2, 1887		15,000 00
4. Fees and all other sources		
Fees	1,160 85	
Interest	208 32	
Farm products	153 58	
Miscellaneous	338 10	
Subscription loan	5,730 00	
		7,590 85
Total		$54,784 93

III. Expenditures for and during the year ended June 30, 1900:

1. Instruction in the subjects specified in Sec. 1, Act of August 30, 1890	$33,536 08
2. Instruction in all other subjects, if any, not mentioned in Question 1 of this series	1,080 00
3. Administrative expenses (president's, secretary's, treasurer's, librarian's salary, clerical service, fuel, light, etc.)	3,016 09
4. Experiment station	15,815 38
Total	$53,447 55

IV. Property, year ended June 30, 1900:

Value of all buildings, $44,000.00; of other equipment, $47,000.00. Value of above property (an estimate only is expected) not used for instruction in the subjects specified in Sec. 1 of Act of August 30, 1890: Buildings, $12,400.00; of other equipment, $5,000.00.

Total number of acres, 270; acres under cultivation, 100; acres used for experiments, 75; value of farm lands, $6,000.00; amount of all endowment funds, none, but nearly 13,000 acres of land have recently been appropriated to this institution.

Number of bound volumes, June 30th, 1900, 3,649; pamphlets, 2,000.

V. Faculty during the year ended June 30, 1900:

1. College of Agriculture and Mechanic Arts:

	Male	Female
a. Preparatory classes	1	3
b. Collegiate and special classes	16	4
c. Total, counting none twice	17	6

2. Number in all other departments (avoiding duplication)	1	1
3. Number of staff of experiment station.....	12	1

VI. Students during the year ended June 30, 1897:

1. College of Agriculture and Mechanic Arts:

	Male	Female
a. Preparatory classes...................	95	48
b. Collegiate and special classes..........	23	19
c. Post-graduate courses.................	..	1
Total, counting none twice..........	118	67
2. Number in all other departments	11	8

3. Number of students that pursued courses in agriculture, 1; mechanical engineering, 7; civil engineering, 1; electrical engineering, none; mining engineering, none; architecture, none; household economy, none; veterinary science, none; dairying, none; military tactics, none.

4. What degrees, and how many of each kind, were conferred in 1899-1900? On men, three (Bachelor of Science); on women, none.

5. What, and how many, honorary degrees were conferred in 1899-1900? None.

[Signed] FREDERIC W. SANDERS,
Date: August 1st, 1900. President.

REPORT OF THE TREASURER

RECEIPTS

Balance on hand July 1st, 1899....................$	483 32
Received by subscription, etc., to make up existing deficiency.....................................	8,052 76
Date of receipt of installment for 1899-1900, Aug. 15th, 1899. Amount	25,000 00
Total available for the year ended June 30,1900	$33,536 08

DISBURSEMENTS

Agriculture:		
1. For salaries of instructors:		
J. J. Vernon	$ 100 00	
Charles A. Keffer	400 02	
Fabian Garcia	100 00	
Humboldt Casad	100 00	
2. For facilities as follows:		
Text books and reference books	161 75	
Apparatus, machinery, stock and material	1,882 60	
Total		$ 2,744 37
Mechanic Arts:		
1. For salaries of instructors:		
Frank W. Brady	1,800 00	
Charles Mills	1,200 00	
Archie B. Sage	601 35	
R. R. Larkin	300 00	
Geraldine Combs	100 00	
F. G. Thornton	150 00	
Lunah Wallace	165 00	
Isabel Mordy	10 00	
2. For facilities as follows:		
Text books and reference books	355 36	
Apparatus, machinery, stock and material	3,519 83	
Total		$ 8,201 54
English Language:		
1. For salaries of instructors:		
F. F. Barker	$1,260 00	
F. E. Lester	900 00	
Ellen F. Gibson	400 00	
Geraldine Combs	400 00	
Helen M. Macgregor	349 92	
Ida M. Jones	360 00	
R. R. Larkin	300 00	
F. G. Thornton	150 00	
F. E. Blakesly	6 00	
2. For facilities as follows:		
Text books and reference books	1,533 04	

For apparatus, machinery, stock and material	61 43	
Total		$ 5,720 39

Mathematical Science:

1. For salaries of instructors:		
Clarence T. Hagerty	$1,800 00	
R. R. Larkin	400 00	
Ellen F. Gibson	250 00	
Geraldine Combs	200 00	
F. G. Thornton	150 00	
Hiram Hadley	100 00	
2. For facilities as follows:		
Text books and reference books	186 38	
Apparatus, machinery, stock and material	50 00	
Total		$ 3,136 38

Natural or Physical Science:

1. For salaries of instructors:		
E. O. Wooton	$ 999 96	
J. D. Tinsley	999 96	
R. F. Hare	999 96	
Arthur Goss	800 04	
Joseph F. Bennett	650 00	
R. R. Larkin	300 00	
E. F. Gibson	250 00	
T. D. A. Cockerell	200 04	
Geraldine Combs	200 00	
F. G. Thornton	150 00	
Hiram Hadley	100 00	
2. For facilities as follows:		
Text books and reference books	734 45	
Appartus, machinery, stock and material	2,373 48	
Total		$ 8,757 89

Economic Science:

1. For salaries of instructors:		
Frederic W. Sanders	$1,500 00	
Hiram Hadley	1,600 00	
Alice Horning	500 00	

R. R. Larkin	200 00	
F. G. Thornton	150 00	
2. For facilities as follows:		
Text books and reference books	626 23	
Apparatus, machinery, stock and material	399 28	
Total		$ 4,975 51

Total expended during the year	$33,536 08
Balance remaining unexpended July 1, 1900	

I hereby certify that the above account is correct and true, and, together with the schedules hereunto attached, truly represents the details of expenditures for the period and by the institution named, and that said expenditures were applied only to instruction in agriculture, the mechanic arts, the English language and the various branches of mathematical, physical, natural and economic science, with special reference to their application in the industries of life, and to the facilities for such instruction.

(Signed) P. H. Curran, Treasurer.

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